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PETER COOPER,

THE MERCHANT AND PHILANTHROPIST.

ON the 4th of April last there passed away from earth one of New York City's oldest residents and best citizens. A man by no means remarkable for gifts of intellect or brilliant executive or business endowments, he had, nevertheless, won his way to fortune and the highest round in popular esteem. An industrious

nature, aided by correct habits, had found opportunities in spheres which, fifty or more years ago, were just opening in America, and whose possibilities of expansion were not dreamed of by the practical man. Hence he became rich by the gradual development of his enterprises—a normal development associated with the growth of the community and its resultant demand upon manufacturing interests. It should be said that he helped to stimulate the activity of American manufactures, especially in iron, by his Baltimore investment, and subsequent mills in New York and Trenton.

What he possessed in the way of organization may be summed up in the following concise analysis. He possessed a head bordering on twenty-three inches in circumference, in which the organs of the perceptive intellect, the side-head and the crown, were well marked. His temperament was strongly motive, as appears in the massive bony features, and which imparted strength and endurance to the body and energy to the mind. He was persevering, steadfast, inventive, discerning of practical relations, appreciative of details, a good judge of qualities and condition. Never distinguished for imitation, never inclined to follow the usages of others or caring about the conventions of society, he preferred to follow the bent of his own impressions, to manage his affairs in accordance with a plan of his own devising, and to act in accordance with what seemed expedient and befitting to the occasion.

His social nature was not deficient: he loved home and its relations, was fond of children, retained the friendship of those with whom he became intimate and the esteem of ordinary acquaintances. His Benevolence was large; the organ had developed into its marked prominence after he became forty years of age. It was influential in a restraining, suggestive sense in his early life, but later it became a dominant power in his mental economy—operating upon his strong practical and utilitarian views, and softening and toning them with the gentle spirit of kindness and philanthropy. In his philanthropy, however, strong individuality would be evident; his own plan, rather than that of another, would be carried out. Mr. Cooper was not a man of sentiment, as men of sentiment are generally known, had nothing of the goody-goody in his composition, but he was a man of definite and positive aims, to be reached by straightforward, prosaic effort. He believed in effort, hard work, perseverance as the chief factors of success, and his philanthropy aimed to assist those who possessed the qualities of effort, industry, and perseverance to bring them to bear in the work of life.

PETER COOPER was born on the 12th of February, 1791. His father was a poor man, with a large family dependent upon him, which he endeavored to support by conducting a hat-store. As soon as he was old enough, Peter was set to work in the business with the other children. His first work was pulling hair and cutting fur. The advantages of school were almost entirely denied him, for in all his life he only went every other day for a single year. The father was fond of a country life, and finally sold the hat business to his eldest son, and removed to Peekskill, where he opened a country store and built a little church. Later than this he began the brewing of ale, and Peter was employed in delivering the kegs of ale to the places in town and country where it was sold. The father then removed to Catskill, where he went into the hat trade again, and besides this manufactured bricks. The hat-store

was afterward removed to Brooklyn; and not long after this the family went to Newburgh, where Mr. Cooper opened another brewery. Here Peter remained until he was seventeen years of age, when he came to New York, and, after much seeking, obtained a place as an apprentice in a carriage-shop. There he worked until he had reached his majority, and then, as a journeyman, until the opening of the war of 1812, when he went to Hempstead, L. I., and obtained employment in a woolen factory. There he invented a machine for shearing cloth, which obtained such favor that he turned his attention to the building of such machines, and carried on their manufacture successfully to the close of the war, when foreign competition in cloths discouraged him from its continuance. He then commenced the manufacture of cabinet-ware, which he subsequently quitted and opened a grocery. The selling of sugar, starch, and soap, however, by retail, appeared to be out of his line, for he did not prosper in it, and deemed it expedient to return to manufacturing. A lucky opportunity occurred to him to engage in the manufacture of glue and isinglass. He at once availed himself of it, and in a year or so found himself on the high-road to fortune. He continued this business in the same place for twenty-five years; and when he finally made an alteration, it was only to build a larger factory on cheaper ground, and to remain a glue manufacturer until he died.

He was but a young man when, about ten years later, he became interested in the development of the American iron industry. In 1830 he associated with others in the management of iron-works near Baltimore. Disposing of his interest in these, he started a rolling and wire mill in New York City, where he made the first attempt in the application of anthracite coal to the reduction of iron. This mill was removed to Trenton, N. J., in 1845, where it is still in operation on an extensive scale. It is an interesting fact in his career that the first locomotive in general use on this continent was built by Mr. Cooper at Baltimore, after his own designs, and was worked on the Baltimore and Ohio R.R. The first trip of this locomotive was made under the hands of Mr. Cooper himself as the engineer.

He had for many years been prominently identified with most of the important public undertakings having reference to the development of science and social improvement. In the electric telegraph, for instance, he was warmly interested from its earliest conception, and invested his money liberally for its establishment.

But his name is especially famous through his public spirit and practical charity. Few men have, during their lifetime, expended so much of their money in the cause of public and social elevation, and a grander monument to the earnest zeal of a single man in the education of youth in practical industrial lines, and in the promotion of scientific investigation generally, does not exist than that which the Cooper Institute in New York represents.

When Mr. Cooper was working at the bench of the carriage-shop, he earned a little money now and then at wood-carving; with this money he bought books to read and study, and paid for the services of a teacher in the evening. This period of his life taught him the value of evening schools, and it is said he then determined to devote his years to the accumulation of wealth that he might found an institution where working boys and girls could have free instruction. It was more than forty years before that plan took definite form in an act of the State Legislature "to enable Peter Cooper to found a scientific institution in the City of New York," but the purpose, once formed, he never departed from.

In 1858 the foundation-stone of the Cooper Union was laid. A scroll buried with it has this inscription: "The great object that I desire to accomplish by the erection of this Institution is to open the avenues of scientific knowledge to the youth of our city and country, and so unfold the volume of Nature that the young may see the beauties of creation, enjoy its

blessings, and learn to love the Author from whom cometh every good and perfect gift."

The cost of this building, with its recent enlargement, and the endowments made from time to time to meet the growth of the seven departments of instruction, extends into millions, but its beneficent effects upon the thousands of young men and women who have attended its classes are utterly beyond computation. Upward of 3,000 students attend in the course of a single session, and the instruction and lectures are given gratuitously.

Mr. Cooper had few aspirations of a political nature, although from time to time he accepted official positions in the interest of public improvement. In 1876 he was nominated for President of the United States by the Greenback party, on the basis, apparently of his opinion, which he had made known by an occasional pamphlet, that the Government should make the currency a legal tender for all debts and Government dues, fix its value by the interest paid on it when converted into bonds, prevent over-issues by strict and just regulations as to the issue of bonds or currency, and let the people themselves always regulate the relative amount of each by an interconvertible bond. During his later years, he now and then addressed the public from the platform and through "Open Letters" or a pamphlet, in which he discussed, with sincerity, vigor, and much practical judgment, the financial and social questions of the day. He did not echo the views of the majority in these publications. The laboring man always found him a friend. He aided labor organizations, and frequently in his speeches, and in other ways, took up what he believed to be their cause.

Few persons who have been accustomed to attend public gatherings for the discussion of matters of national or community importance have not seen Mr. Cooper on the platform. His appearance was very striking: a tall man, erect and lithe in movement in spite of his age, with strong features, yet less furrowed than those of many men twenty years younger. His forehead was broad and high, and the lines of the sides of his face tapered from his temples to his chin. A pair of old-fashioned spectacles with green side-shades usually covered his eyes, and his hair, long and silvery, hung down to his shoulders, while a long fringe of white beard surrounded the lower portion of his face.

Instead of abating, his interest in the Institute grew with his years, and though he was willing to put aside the claims of his business, he grew more and more engrossed in his system of industrial education. He used to visit the Institute every day, unless the weather was violently stormy, and nearly every one of the attacks of sickness that came upon him of late years was traceable directly to exposure to cold during these visits, or other out-of-door excursions to which his active mind prompted him. It was his custom of recent years to breakfast in his own room. He was not a late sleeper, and was ready to enter his carriage to ride to the Cooper Union, always before noon, and usually by 10 o'clock. By that time, moreover, he had informed himself of the news and discussions of the day by having the newspapers read to him. After spending about two hours in the building, dividing his time between the office and the various departments, he would drive down-town to his old place of business, No. 19 Burling Slip, or to one or the other of the corporations in which he was interested. Usually by 3 o'clock he was back in his home, where he took luncheon, and rested in an easy-chair till dinner-time. He received many callers, being accessible to every one at almost all hours. In his diet, as in all other personal habits, he was exceedingly simple; milk having formed his chief nutriment for the last ten years.

In his address at the funeral of Mr. Cooper, the Rev. Robert Collyer said, what is strangely true, that the founder of the Cooper Institute "stands alone, so far as I know, among the men who would do some great work for the help and blessing of the whole nation, and have lived to see that work perfected in their own life and time."

Fig. 265.—THE INDIAN CHIEF.

STUDIES IN COMPARATIVE PHRENOLOGY.

CHAPTER XII.

THE AMERICAN INDIAN—CEREBRAL STRUCTURE AND CHARACTER.

THE American race, or the aborigines of America, next occupies our attention. As typical of organization, no other race exhibits a more pronounced configuration; and although certain elements in language, ancient remains, worship, custom, etc., have been pointed to by ethnologists as intimations of Asiatic, Polynesian, or Egyptian origin, the American Indian stands apart by himself in temperament, physical constitution, cranial and cerebral structure differing widely from the great races of mankind that we have already considered. Professor S. G. Morton says: "It is an adage among travelers that he who has seen one tribe of Indians has seen all, so much do the individuals of this race resemble each other, notwithstanding their immense geographical distribution, and those differences of climate which embrace the extremes of heat and cold. The half-clad Fuegian, shrinking from his dreary winter, has the same characteristic lineaments, though in an exaggerated degree, as the Indians of the tropical plains; and these again resemble the tribes which inhabit the region west of the Rocky Mountains, those of the great valley of the Mississippi, and those again which skirt the Esquimaux on the north. All possess alike the long, lank, black hair, the brown or cinnamon-colored skin, the heavy brow, the dull and sleepy eye, the full and compressed lips, and the salient but dilated nose. These traits, moreover, are equally common to the savage and civilized nations, whether they inhabit the margins of the rivers or feed on fish or rove the forest, and subsist on the spoils of the chase. It can not be questioned that physical diversities do occur equally singular and inexplicable, as seen in different shades of color, varying from a fair

tint to a complexion almost black, and this, too, under circumstances in which climate can have little or no influence.

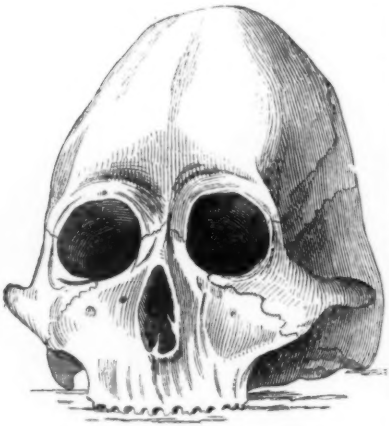

Fig. 266.—Indian Skull—Front View.

So, also, in reference to stature; the differences are remarkable in entire tribes, which, moreover, are geographically proximate to each other. These facts, however, are mere exceptions to a general rule, and do not alter the peculiar physiognomy of the Indian, which is as undeviatingly characteristic as that of the negro; for whether we see him in the athletic Charib or the stunted Chayma, in the dark Californian or the fair Borroa, he is an Indian still, and can not be mistaken for a being of any other race."*

Van Amringe arrays mankind in four general classes: the Shemitic, Japhetic, Ishmaelitic, and Canaanitic, thus ascribing to Noah a general fatherhood, as it were, for the myriads that people the earth. In the Ishmaelitic class he places the American Indian together with Tartar and Arabian tribes, and formulates a general outline of character as appropriate to these widely-separated races, which is deduced more from apparent similarities of custom and mental habit than from their physical constitution and cranial structure. The Arab is certainly superior to the Indian in almost every quality of physique and mind, while his nomadic and domestic habits, although suggestive of a parallelism with the careless, scattered life of the Indian of the plains and mountains, possess a definiteness of plan and purpose unknown in true Indian life. The Arab understands his relation to the higher civilization contiguous to him, and can adapt himself to it in furtherance of his interests, and in a hundred ways he discloses an order of intellect totally different from the savage of America; his head, indeed, is larger, and the contour and quality of his brain show his affinity to the Caucasian family. The true nomad of the New World is the Patagonian, and he is a low expression of the Indian type, analogous to the Bosjesman of South Africa in his relation to the negro type. Ever erratic since the introduction of houses in South America, the Patagonian tribes have wandered over their sterile plains fierce and untamable, averse to agriculture, and hostile to the arts of civilization.*

The head of an average Indian impresses us at once by its physical characteristics, so powerful is its muscular and osseous anatomy. Scarcely exceeding in absolute volume the negro head, the prominence of the vertex, the thickness of the ridges over the eyes, the plump cheek bones, the ponderous jaws, compressed mouth, and protuberant mastoids contrast with the African, and mark the

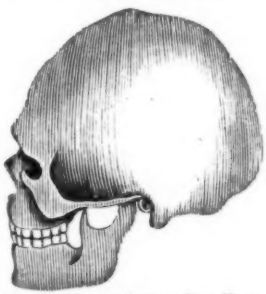

Fig. 267.—Indian Skull—Side View.

Indian as a man whose type of mind is related chiefly to the physical side of

* Essay read before the Boston Society of Natural History, April 27, 1842.

* Prichard's "Natural History of Man."

human life, to the expression of animal force, activity, endurance, contest.

The Temperament is of the motive character, in accord with the predominating bone and muscle. An original peculiarity of the Indian, it has been strengthened by ages of physical activity and exposure, and its influence pervades his whole mental organism. His life in the natural state is one of almost constant movement; hunting, warfare, and a little agriculture constituting its routine. The want of sensibility accompanying this phase of temperament likens him to the Mongol, and is the explanation in great part of that callous indifference with which he is known to suffer most barbarous inflictions of pain, and in his turn to torment an enemy with more horrid cruelties.

It is on account of physical or temperamental similarity in certain respects that some ethnologists of reputation have been led to classify the American aboriginal with the Asiatic Mongol, or to find an alliance of origin between tribes whose habitat borders on the equator and semi-civilized peoples dwelling in the north of Africa, especially the descendants of the ancient Egyptians, and the Arabs. To be sure, the wonderful relics of Toltec civilization in Central and South America have had much to do with suggesting an Eastern derivation for a people who many centuries ago possessed so high a degree of intellectual culture that American archæology has become a serious competitor with Oriental for the attention of the scientific investigator; but we are inclined to think with Humboldt and others that the peculiarities of architecture, rite, and custom which appear to point to Asia and Egypt, are simply those coincidences which would naturally arise from similar wants and impulses in the life of peoples whose circumstances have been in many respects similar. Dr. Caldwell remarks on this point that it "would, indeed, be not only singular, but wonderful and unaccountable, if tribes and nations of men possessed of similar attributes of mind and body, residing in similar climates and situations, influenced by similar states of society, and obliged to support themselves by similar means in similar pursuits—it would form a problem altogether inexplicable if nations thus situated did not contract habits and usages, and instinctively modes of life and action possessing toward each other many striking resemblances."

We are not prepared to insist that the Central American or Mexican civilization of ages ago was the work of the ancestors of the modern Indian, for we must confess our inability to explain the incongruity presented when the refinement and culture of the Toltecs are contrasted with the rudeness and barbarity of the Indian as he is to-day.

Fig. 268.—An Arab.

On coming to consider his cerebral structure, we find him, as it has been already stated, standing by himself; Otomie, Mexican, Patagonian, Botocudo, Sioux, Creek, Seminole, Pawnee, the typical configuration is in each readily identified as substantially the same.

The head belongs to the mesocephalic class, the development of the lower lateral and occipital regions exceeding that of the Malay, while the forehead is less prominent in the superior portion. At the inferior or supra-orbitar part the head is very prominent, the ridges being especially marked and the frontal sinuses extensive. The forehead, however, is narrow, but the lower temporal region swells out rapidly toward the ears, and the lower

parietal border is strikingly expanded. The crown is elevated and cone-like, imparting an appearance of compression and deficiency to the adjoining parts. Toward the occiput the profile falls off rapidly, so that the back-head appears flattened and approximating the perpendicular. Viewed from behind, the breadth from ear to ear is strikingly great, the organs of the physico-preservative class being predominant, while those of the social group are but moderate in development. The elevation of the head is perhaps the most conspicuous feature of its configuration to the casual observer, the peculiar cone-like aspect being due to the remarkable development of the cerebral organs which relate to personality or individuation. In the portrait of Black Hawk, the celebrated chief of the Sac and Fox tribe,* of which a side view is given, this characteristic is pronounced; the lateral development is also impressive. If we glance at the outlines of the Huron and Cherokee skulls we notice a similar contour at the coronal region.

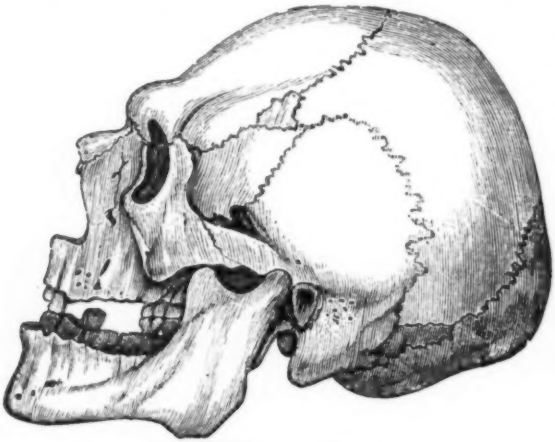

Fig. 269.—Skull of a Huron.

Corresponding with this development, the Indian character has ever been distinguished for determination, persistency, pride, self-reliance, independence. The large and active organs of the lower side-head, together with Combativeness and Caution, combining in activity and influence with his independence of sentiment, have made for him an exceptional record in the history of conflict between civilization and savagery—for while he has been compelled to retreat before the superior arts and organization of the white man, he has never submitted to him; he could be exterminated, but never conquered by force.

The relative development of the head in the moral sentiments is small, hence the prevailing influence of the physico-preservative organs at the base of the brain, rendering them fierce, warlike, cruel, vengeful, brutal. In some tribes, for instance the Araucanian, Choctaws, and Cherokees, variations from the type are found in the development of the superior parts of the brain, the organs of Be

Fig. 270.—Black Hawk.

* This Indian warrior took part with England against America in the war of 1812, and twenty years later obstinately contested the occupation of the territory where his people had been living by white settlers, at one time exhibiting all the ferocity of savage vengeance in retaliation for the encroachments upon what he and his followers deemed their own inalienably, and at another singular heroism and military craft in battling against the superior numbers and equipment of the United States forces that were sent to drive him to the reservation beyond the Mississippi.

nevolence and of the reflective intellect being appreciably larger, and affecting the animal forces in such a manner as to restrain them to the extent of producing a milder form of barbarism. These tribes, the first-named especially, are brave, warlike, artful, proud in spirit, quick to resent indignity and encroachment, but, at the same time, less sanguinary, fierce, and vindictive than the average Indian. The Charib, on the other hand, shows a variation in the opposite direction, the head being lower than the typical form, and more compressed in the upper portion of the intellect, and in correspondence with his cerebral structure his character ex-

Fig. 271.—A Sioux Woman.

ceeds that of any other tribal representative in animality, ferocity, and wild unrestraint.

Intellectually, the great predominance of the perceptive organs over the reflectives is at once evident, and these have been rendered so active by the physical activities of savage life that their acuteness in apprehending the conditions and relations of natural objects is in many respects wonderful. An Indian of the forest will detect at a glance peculiarities in a tree, a bird, a horse, or other animal, which to the eye and ear of the white man, unused to woodcraft, are utterly unrecognizable. The physico-apprehensiveness of the red man, indeed, exceeds that of any other race, while in reasoning, formulating ideas, and logical deductions he is inferior to the Malay.

Of the moral faculties Hope, Conscien-

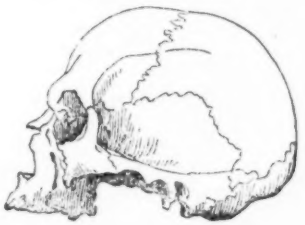

Fig. 272.—Skull of a Cherokee.

tiousness, and Veneration are the more active in the Indian, and impress him with their respective influences. Hence it is that he has always manifested a belief in an overruling Power and a future state; yet through lack of the rational element he has been credulous, superstitious, and strong in his belief in magic and supernatural powers. Through his Conscientiousness the red man obtains that sense of justice which has distinguished him from the earliest time, making him at once faithful to his word and exacting in his demand of honesty in others. He does not show the readiness of the negro in receiving the teaching of the missionary, and exchanging his spirits of the wood and air for the Gospel of Christ, or substituting the incantations and jugglery of his "medicine man" for the simple faith in one omnipotent Creator and Father. In fact, the individual-

Fig. 273.—Skull of a Carib (Flathead).

ism of his moral character exhibits itself in his proneness, when the restraints and associations of Christian teaching are

withdrawn, to revert to the wild rites and mummery of his old belief.

In the social sentiments the Indian indicates comparatively little of warmth and tenderness, and his moderate development of brain in the occipital region is coincident with the mental manifestation. Inhabitiveness is the most active of the

Fig. 274.—Indians of North and South America.

social group, imparting a love of place, and indisposition to leave the region of his birth and the lands which afford him the means of subsistence. For woman he entertains little of the respect which civilization is wont to accord: she is his servant and drudge, yet in the marital relations infidelity is rare, and harm done to wife or child by another is followed by summary vengeance. His domestic feelings are subject to his self-esteem and the purposes of his bold and warlike nature; he leaves home and its concerns to be managed by women, while the chase and battle find the employment most gratifying to his animal forces. Hence the Indian woman, as a rule, shows a different cerebral organization from the male, much less of the strong individuality, and less of the executive, passional stimuli we have described as peculiar to him, and lying at the base of his inaptitude for civilization. He is gradually fading from the earth. Mr. Combe says, with some appreciation of the Indian nature: "When Europe has been conquered, the victorious and the vanquished have in a few ages amalgamated together, been blended into one, and have formed at last a single and united people. The native Americans have, on the contrary, receded uniformly before the Europeans." Surrounded by civilizing influences the Indian nature is slowly modified; but the race will have disappeared before the missionary and the teacher will have completed their work in transforming the child of the forest to a member of civilized society. D.

THE DEVELOPMENT OF MUSICAL INSTRUMENTS AND MUSICAL CULTURE.

THE feeling or sentiment for music is deeply and broadly planted in human nature. The rudest people of whom we have knowledge furnish some sounding accompaniment to their dance or song. The clapping of hands for encouragement or applause is likewise of early origin and wide use. The striking of sticks and bones together, the beating of skins strained above a hollow cylinder, forming a drum, and the scraping a notched stick by another bit of wood—the original thought of a violin or guitar—are all primitive devices for an instrumental accompaniment to the singing voice or the agile foot.

In Africa, Australia, China, Japan, the Indies, Europe, and among our own native races, the feeling for music has been more or less developed from the earliest days of which we have any fair record. And this feeling has been shown and perpetuated by instruments of various sorts, from the most rude clappers, drums, flutes, guitars, harmonicons, and virginals, to the grand pianos, organs, and varied orchestral instruments of to-day.

The simplest device for marking rhythmical sound is the clapper of bone or wood, held between the fingers and struck together by a peculiar, jerking motion of the wrist, as played by minstrels. Two

three, or more pieces are used according to the taste of the player. Another form of clapper in use among Asiatics is made by stringing together several bits of sonorous wood which jingle and rattle by shaking. A farther development of the same idea is the rattle made with pebbles and seeds shaken about in dried gourds. This is in use in Africa, among the native Mexicans, and the Alaska Indians.

The tambourine and the drum are universally used among both savage and civilized peoples. The former consists of a skin stretched upon an oval band of wood and generally hung with rattles, the skin being that of human being, of snake, of dog, of sheep, or antelope. They are carried about in African desert journeys and Indian jungle marches; the Turk beats them with lazy fingers, the Chinese make them of many sizes, and the African of Tunis, the Nile, and the Gold Coast dances his wild nature out to the sound of their monotonous jangle.

The Hoopah Indians of North America make a drum by drawing two wolf or dog skins tightly over a square frame; it is beaten with a stick. The Mexicans of Cortez's day covered their drums with snake skins. The Chinese, Japanese, Turk, African, Egyptian, Siamese, East Indian, and New Zealander, all use the drum in various forms, showing the same general design and purpose.

Bells have been as widely used as drums. The simplest form of the bell is a hollow, metal disk having a clapper suspended within. Bronze bells were in use in Mexico and Peru before the Spanish conquest, and Layard found small bronze bells with iron clappers at Nimroud. Bells were made in ancient Egypt, Europe, and Asia. The great bell of Russia has been widely celebrated. During the Middle Ages in Europe there were many bells cast, and ladies often gave gold and silver ornaments to be melted in the mass of iron or bronze, thinking to make the bell-metal more melodious in tone. They were frequently named, and always bore some inscription. The "great bell Roland" of Ghent was celebrated in verse and prose. In the old North Church of Boston, Mass., is a chime of eight lovely bells (each bearing an inscription), which were cast in 1774. They are the oldest bells in America.

In China bells are struck; they have no clappers. It is thought the idea of chimes is shadowed forth by their instrument, made of metallic plates fastened in a frame and arranged in a regular order of musical tones. From these rude beginnings have developed the magnificent chimes whose lovely tones haunt forever the heart and dreams of one who feels their charm.

Clappers, drums, and bells did not satisfy the musical taste of the more advanced races, and other instruments were invented. One, named the wood-harmonicon, is made by binding together several pieces or slats of wood by thongs made of ox-hide into a single instrument designed to be struck with a mallet. They are used in Africa and Asia, and consist of ten bars of wood a foot in length, notched near each end, and held in place by the thongs which, passing around the notched ends, hold them together. This mat of wooden bars is about three feet long. The left-hand bars are narrow and gradually increase in size, the smaller giving the highest sound, which gradually pass into graver tones upon the right. The shape and size of these bars determine the pitch. At the back of the instrument, along the middle, runs a wide piece of wood having in it a row of square holes, one behind each bar, to which is fastened a box or calabash to hold and intensify the sound. Now, if one can fancy this strip of bound slats and row of boxes at the back struck with two wands tipped with some soft material, one in each hand of the performer, he will have an idea of the *maramba*, or wood-harmonicon. These instruments are sometimes suspended by a thong fastened at each end, and sometimes set in an elaborate frame. Some of them, it is said, are tuned to the diatonic scale, in its simplest form of C major. But usually the pentatonic scale is

used, which drops the fourth and seventh tones of the diatonic, giving a peculiar, wild, mournful force, as heard in early Scotch music. The maramba contains in a rude form the germ of our piano-forte, in which graduated wires take the place of the graded bits of wood, and the sounding-board performs the office of the sound-boxes at the rear of the ruder instrument.

The guitar is thought to have been suggested by the twang of the bow-string when drawn to wing the arrow. The guitar with one string, as used by some North American Indians, is held in the teeth and played by the right-hand fingers, while the left hand slides along the string to vary the tone. A similar instrument is used among the natives of the Gold Coast and the Upper Nile, in Bengal, and throughout the Indies.

The native Alaskan plays a two-stringed guitar; the Siamese a two-stringed fiddle, as do also the Chinese and the Moors; the main distinction between the guitar and fiddle being the playing with the fingers or with a bow. The Chinese, Turk, Japanese, and Moor also use three and four-stringed instruments of this class, some having strings of hair, some of silk, of flax, or of gut, either used separately or in combination, to vary the tone. Many of these embryo violins have frets, and oval or round bodies covered with parchment; some are very rude, others quite ornate. The Chinese, Japanese, and Turk have lutes or harps arranged with silken or brass or gut strings, played with the fingers. Some African lyres are said to resemble those of ancient Greece. Lowell has arranged the legend of the origin of the lyre into the pleasing poem of which we give a part:

"There lay upon the ocean's shore,
What once a tortoise served to cover
A year and more, with rush and roar
The surf had rolled it over.

. . . . . .

"So there it lay, through wet and dry,
As empty as the last new sonnet,
Till by and by came Mercury,
And, having mused upon it:
'Why here,' cried he, 'the thing of things,
In shape, material, and dimension!
Give it but strings, and, lo, it sings,
A wonderful invention!'

"So said, so done; the chords he strained,
And as his fingers o'er them hovered,
The shell disdained, a soul had gained,
The lyre had been discovered."

The simplest wind-instruments were made of bone or reeds. A whistle would invariably be invented by the boys of any tribe or people to blow for amusement, to entice birds, or to call companions. The next step would be to the flute. The Indian-American tribes, the Mexicans, Peruvians, Africans, Chinese, and Hindoos have various forms of this pleasing little instrument.

From blowing hollow reeds, bamboo, and palm, to the use of animals' horns, was a step easily taken; accordingly we find them employed in every land, now made of elephants' tusks, then of buffalo, ox, or antelope horns, also of conch shells. From this beginning grew the metal horns, trumpets, and clarions in use among civilized peoples.

It is said the idea of the pipe-organ was caught by a Russian from a wind-instrument of the Chinese, called "Cheng." It consists of several bamboo pipes of varying lengths inserted uprightly in an oval-shaped wooden receptacle, having a tube for a mouth-piece at one side near the bottom. The pipes have finger-holes near the insertion into the oval body. To catch more clearly the idea of this "cheng," take an ordinary china bowl with straight sides and set a row of reeds of different lengths all round upon the inside, pack something in the bowl to hold them firmly, then if you can make a hole near the bottom of the bowl at one side, and insert a tube for a mouth-piece having a connection with every hollow reed or pipe, you will have an imitation Chinese "cheng." The pitch is determined by the length of the pipe; the sound comes from the vibration of a metallic tongue in each pipe.

Although the Hindoos near them use a diatonic scale, the Chinese employ the pentatonic. All the members of a band play the melody only, as they make no

effort at harmonizing different tones. They have attained about the state of musical culture prevalent in Europe until the tenth century, when first slight attempts at harmony were made by using, in similar motion, the fourth, fifth, and octave, whilst the instruments played only the vocal score until the fifteenth century, when musicians began to vary orchestral effects by composing separate parts for different instruments.

In music, as in other branches of scientific and æsthetic culture, the European and his descendants take lead. No Asiatic or African people have as yet attained the grade of development reached by the European and American. Many ascribe this difference between peoples to the influence of climate in unfolding the intellect and sensibilities through the greater material needs of Northern races. But this will not suffice to explain the matter, for Asia is mainly within the same degrees of latitude as Europe, and her most cultivated classes do not equal those of the same class of Europeans. Probably the difference is mainly caused by the cultus given by their respective religions. The high character of the Jehovah of the Hebrews, and the beautiful ideal exhibited by Jesus of Nazareth, with the exquisite purity and simplicity of his teachings and creed, have by degrees elevated the Christian disciple and freed him from the weight of the superstitious beliefs and observances of the Pagan, the Buddhist, and the Mohammedan. The human mind, thus released from the bondage of gods many, and prophets many, and thousands of cumbrous acts of devotion, has had time and scope to observe the beauties of nature and the joyousness of musical sounds.

The birds taught mankind singing-notes, and the rippling brook, the soughing wind, the twanging bow-string, and the murmuring shell suggested the instrumental accompaniment. From these wild sounds and the rude beginnings of savage man has grown the music of to-day. Little by little the piano-forte and the noble organ have gained their present perfection. Step by step the fine effects of harmonized parts and harmonized instruments have been attained. In addition to this, poetry and music, at first rudely joined, have become so closely united that each adds to the charm of the other, and their united influence in molding, cheering, and renewing human nature is something incalculable. From deep and true musical culture, we may expect the highest results in æsthetic growth. Even superficial musical attainments are better than none, and the systematic study of harmony and choral effects promotes intellectual as well as emotional growth. The masses of mankind are not bettered or influenced in nearly so great a degree by that which appeals to the intellect as by that which moves the feelings, excites the emotional nature.

Fine musical results can only be attained by long-continued and thorough study commenced in early youth. The reduced cost of instruments and teaching ought to give us great musical growth as a nation during the coming years. Widespread knowledge and appreciation of the songs of Schubert and Schumann, the sonatas of Mozart and Beethoven, and the oratorios of Haydn and Handel would be a musical blessing. If ever we could live to see the masses gather to entertainments of the music of these masters, as they now gather to hear the prurient play, the cackle of the circus clown, or other rude pastime, we shall feel that we have been present at the day-dawn of the millennium.

VERONIQUE PETIT.

LOVELY SPRING.

FAR in the suddy South she liggers,
Yet slowly cubs alog.
With fairy garlads id her figgers;
With sdadches of sweet sog.

Her eyes with probisc beebig,
Her sbiles will rabture brig;
The sudlight frob her hair is streabig—
Thrice welcobe, lovely Sprig.

SNEEZY.

SELF-ESTEEM.—ITS TRUE NATURE.

WITHIN a year, or little more, the JOURNAL has published several articles from able writers in relation to this organ. With much of what they say I agree; in respect to the remainder, I would offer some comments of my own.

1. I deem that the organ needs no new definition. The standard authors on phrenological science have told us what its function is, and to vary from them is to imbibe error.

2. It is no more a part of will than is conscientiousness, firmness, or combativeness. Will is "the action of the whole mind on the whole subject." That is the only true and complete definition of will that was ever given. Of course, large self-esteem might lead to decisions that would not be made with small, and a like thing might be affirmed of any faculty.

3. Let it not be forgotten that this faculty is one of the "individual" sentiments. When large and active it might restrain one from doing something degrading. I simply say it *might*. It might not; and when it did, the motive would be selfish, and the power still the focus of other temptations.

4. Self-esteem is not only a personal faculty, but the very summit of personality. It has been so from the beginning. It has founded tyrannies, justified robberies, instituted persecutions, withheld rights, and so on. The same innate feeling would propose to overthrow thrones and dynasties at once, by wholesale assassination! Does any reader of history, any reader of the news of the present hour, doubt this?

5. In the jails and reform schools which I have visited, it seemed to me the inmates had a full average share of this faculty now under consideration.

6. Any one may observe that self-esteem is usually large, in proportion as the forehead is small and retreating. It has been suggested to me, that this is one of the kind compensations of our heavenly Father, that individuals should be buoyed up by spontaneous self-complacency, in the ratio that the intellect is weak.

7. It is a great annoyance to many persons of fine intellect, and often a hindrance, that they have no more natural self-esteem. Yet a great part of all the good work that is done in this world, at home, in shop and field, for church, State, science, literature, etc., is performed by those possessing not more than average of self-estimation. With these faithful ones, these humble workers, these pillars of the world, it is not unfrequently moderate. The average American has less self-esteem relatively than the average native of any other enlightened nations.

8. It is fashionable just now, not only to "cry up" self-esteem, but to affect it. A lady just going by has arranged the expression of her features, her pose, and carriage, to indicate that she is entirely satisfied with herself. Her brother would be ashamed to exalt humility. He must assume to be perfect in himself and sufficient to himself. Repentance and confession are resisted. We are to let our neighbors know that we are very much pleased with our own precious selves and have need of nothing. We may break; we are not to bend. We are going to be grand or resort to the desperate.

9. Just as fast as the knowledge of phrenology spreads among the people, individuals will be estimated, not by position, not by the estimate they put upon themselves, but by real endowment. The greatest scourges of mankind, the most horrible criminals, have generally had large self-esteem. Look over your acquaintance; find another Dombey; select one who lives for himself and would subordinate others; pick out a shirk; show me one who will tell falsehoods to screen himself and throw blame on another contemplate a man so jealous of encroachment, so assumptive of possession, arrogant, offensive, and we have before our minds, each time, a person whose self-esteem exceeds his conscientiousness.

10. Webster's modesty was as distin-

guished almost as his amazing understanding and grand patriotism. We are re-honoring him and shall be for ages to come. We only err when we would make it appear that he was faultless. If General Grant had very large self-esteem, he would have failed; he would not have come down to facts. He would have stalked about, glorifying himself. He would have been shy about associating with himself the ablest men, or giving them free scope. The South, with less self-estimation, would not have seceded and trusted to prowess. Whoever watches the Southern brain now, will note the rapid development of causality, constructiveness, and the sense of justice. A proud Yankee repeatedly fails; he and his family are too conceited and vain to prosper. A German engages in the same occupation, pays his debts, "lays up" money.

Bonaparte could sleep while he was starving to death the great Ouverture. His fanatical self-esteem betrayed him more and more. A young neighbor of mine has a head which rises high in this locality, and is surmounted by a tuft of hair that causes this portion of the cranium to seem the more elevated. He is never wrong, and always ready to prove it, with no scruple about facts. He can not submit even to look at some of the conditions of any marked success. He walks with a stride, and appears to be gazing into the sky. To be asked to get a pail of water, or to do any small service, offends him exceedingly. His powerful face will put on an almost alarming expression at such times. Yet, there is no evidence that he is a brave man. His anxious, amiable wife is fading in strength, and will probably not live a year longer.

Not a great while ago, a very distinguished lecturer was to speak not many miles from my residence. I went to hear him, and before the time set for the lecture to open, I saw a man go into a barber's shop, whom I divined to be the speaker. Wandering in, I had a fine opportunity to glance at his craniumology. I observed that his self-esteem was elephantine. I listened, in the course of that lecture, to one of the most pitiless, sweeping slanders that ever filled my ear; but it doubtless added to the effect of his address, and made a deep impression in his favor with the multitude. O ye who have suffered so much from deficient self-esteem, who ought to have had more confidence, more hardihood, more brass, a better opinion constitutionally of your own selves (and your number is millions), be a little comforted! We all shall be weighed in a just balance at last.

An humble, patient, conforming spirit, looks above for help, has no confidence in mere personal force as opposed to law, unites itself with the everlasting energies, reveres truth, abhors false estimates of every kind, and grows up as mountains rise out of the sea.

REV. L. HOLMES.

SEED-TIME AND HARVEST.

We stand at morn on border-land of youth,
In joyous sunlight dreaming,
The new-sown fields and meadow-lands of life,
With harvest promise teeming.

Noon comes with radiant bloom and flowers bright,
In summer's roseate glory.
While sweet and strong earth's working-fields among,
Is heard Love's olden story.

And evening cometh, holy, calm, and still,
The lingering sunlight falling,
On golden harvest-fields where sweet and clear
Are heard the reapers calling.

Onward they come thro' twilight's silver glow,
Bringing to heavenly portal
A lasting harvest from the fields of earth
To grace the life immortal.

"Knowledge is power," one wisely said of old,
And they who teach true living,
Earth's first and earliest knowledge do impart,
In fullest measure giving.

In fields of thought the golden seed you sow
Of Life's best use and duty,
That earthly autumn-time in blessings yield
A harvest of true beauty.

CALLIE L. BONNEY.

JAMES B. EADS,

THE EMINENT ENGINEER.

THE portrait before us shows marked indications of talent and power. The head appears to be large, and especially well developed across the brow and up the middle of the forehead: a type of organization giving practical talent, readiness of judgment, retentiveness of memory, power of criticism and discrimination, and that kind of clearness of judgment which is almost intuitive, rendering a man possessing it independent in his judgment, because he feels so certain that he is right. The upper part of the forehead is massive: showing the ability to reason, theorize, investigate, and invent. That long face, belonging as we understand it to a tall body, and the well-marked features, the long nose, and long upper lip, and prominent chin, and vise-like mouth, show decision, resolution, dignity, self-hood; in fine, a sort of consciousness that he is "the hub of the wheel" wherever he moves. We should expect the history of his boyhood to reveal the fact that he was captain of the games of marbles and ball, the leader in

boating, and everything else. If one will partly close the eyes, so as to get an indistinct outline of the head and face, he will be reminded of the portrait of Commodore Vanderbilt; especially in the length of the head and face, and in that fullness and prominence of the forehead, and in the elevation of the head above the ears in the region of Firmness and Self-esteem. Vanderbilt lacked education and the ripeness of the forces of modern civilization which he aided to develop; was obliged to begin at the foundation and work largely as a pioneer.

He, like our present subject, was organized for large affairs, for pushing enterprises beyond the beaten track, for being a central figure, and a ruler in his sphere. In this portrait we see all the qualities which would make a great scholar, especially in science. His head is broad above and about the ears, indicating more force, and at the same time more prudence, than appeared in the head of Vanderbilt.

In this head we see also large Combativeness, and this, joined with his practical talent, and firmness, and self-hood, would lead him to feel that he could overcome any difficulty which could be mastered. He could have become a great military commander, had he been thrown into that line of duty; he might have been a great statesman and scholar; he has more inventive talent than Vanderbilt, more mechanical originality, and has also a great deal more faith, which, working with the inventive, tends to reveal new processes, and new fields and methods of achievement. His Hope is large, hence he is liable to magnify his prospects, and perhaps startle the world by his hopeful projects. To him, however, they seem clear and certain; and with his ingenuity to plan, and his force to energize endeavor, his achievements take a high rank. He would not be willing to dabble in things that are common, nor would he be satisfied to work merely for pecuniary results; he is ambitious, and his ambition takes a higher rank than merely to acquire millions. He would think more of a great name than of a great fortune, yet would regard a great fortune as a convenience, and as an evidence of power in its acquisition.

Such an organization as that ought to be successful in any legitimate field of manly endeavor, whether in scholarship, science, mechanism, finance, the army, or in controlling and managing the affairs of men on a large scale, and we are of opinion that if his life shall be spared, he will do greater things than those coupled with his name.

The work of this gentleman in improving the navigation of the Mississippi River, especially at its mouth, has brought him very prominently before the American public and made his reputation second to that of no other engineer in the world. He is a Western product, having been born in Lawrenceburg, Ind., on the 23d of May, 1820. When thirteen years of age his parents removed to St. Louis, and that city has been his home ever since. His early education was not thorough by any means, as he left school at thirteen on account of his father's inability to pay the expense of his tuition; but out of school he was none the less diligent as a student of the useful and practical, taking advantage of every opportunity that presented itself to enlarge his fund of knowledge, while at the same time he was sustaining himself by clerical services of one sort or another.

For five years he was a clerk in a dry-goods store; but having unusual mechanical ingenuity and a decided taste

for mathematics, he was not contented with such employment. His natural bent was toward engineering; and he determined to fit himself for the profession of a civil engineer, and so devoted all his spare time to the study of that and kindred branches of science. At the age of nineteen he was employed as a clerk on a Mississippi River steamboat; and then he first began to study the peculiarities of the great river and to consider the means involved in its improvement. As early as 1842 he constructed a diving-bell boat, designed to recover cargoes of sunken steamers; and soon afterward he contrived large boats, provided with novel and powerful machinery, for raising the hulls and cargoes of steamers which had gone to the bottom. By these contrivances a number of large and valuable vessels were recovered. The operations of the young engineer extended over the entire river and its principal tributaries, and made him familiar with every part of the Mississippi, and thus gave him the foundation for the theories which he has since demonstrated with signal success. Young Eads was remarkably self-reliant; indeed, many older engineers regarded him as over bold, even to recklessness. In 1856 he proposed to remove all the wrecks and snags which obstructed the channels of the Mississippi, Missouri, Ohio, and Arkansas Rivers, and a bill authorizing him to undertake the work passed the House of Representatives in 1857, but failed to pass the Senate for want of time.

In 1861 he was requested by President Lincoln to confer with him respecting the practicability of constructing iron-clads of light draft for service on the Western rivers. Soon after this conference Mr. Eads designed and built eight iron-clads having a speed of nine knots. The vessels were ready for their armament of 107 guns within one hundred days, and were the first war-vessels constructed by the Government. Some of them were engaged in the capture of Fort Henry, more than a month before the memorable contest between the *Monitor* and the *Merrimac*. In 1862–3 Mr. Eads designed and constructed six turreted iron-clad vessels, all of which were heavily plated. The turrets were of novel construction and their powerful 11-inch and 15-inch guns were worked by steam, and could be loaded and discharged in forty-five seconds. This was the first instance where steam-power was used in the manipulation of artillery.

In the interval between 1867 and 1874 he was chiefly occupied with work relating to the plan and construction of the St. Louis bridge, which in many respects has no superior in the world. At the time this work was undertaken, grave doubts were expressed by experienced engineers concerning the practicability of the project, and few men, either in this country or abroad, would have taken hold of so great a work under the circumstances which surrounded it at the beginning. Mr. Eads, with his rare self-reliance, skill, and perseverance met and overcame every difficulty, and finally accomplished the purpose.

The bridge is built of steel. Its central arch has a clear span of 520 feet, and the side arches have each a span of 502 feet. The piers all rest on the solid rock underlying the river deposits. One of these piers, weighing 45,000 tons, was sunk 136 feet below high-water mark, through 90 feet of sand and gravel; and another, weighing 40,000 tons, was sunk to almost as great a depth.

Among the devices employed in overcoming the many natural difficulties the engineer encountered in this work, were those for the construction of the caissons for sinking the piers through the sand to the bed rock. These devices were afterward adopted in sinking the piers of the East River Suspension Bridge at New York.

Mr. Eads had long had in view the project of widening and improving the mouth of the Mississippi River to the commerce of the world. It was proposed by the United States engineers to relieve the commerce of the river by the construction of a canal from its left bank,

near Fort St. Philip, to Breton Bay, by which the bars at the mouth of the river would be entirely avoided. Mr. Eads opposed this scheme vigorously in several pamphlets, claiming that a canal with locks would be inadequate to meet the requirements of the growing commerce of the river, and proposed the creation of a broad, deep, natural channel through the bar at the mouth of the river by means of jetties or parallel dikes. Mr. Eads maintained that the effect of the construction of jetties would inevitably be to create such a channel, inasmuch as it would result in bringing the current of the river within narrow limits and greatly increase its velocity, and thus augment the force required to carry far out into the deep water of the Gulf the sedimentary matter with which the river is charged. In 1872 a commission, composed of seven United States engineers, was charged by Act of Congress with the responsible duty of devising the best means to open the mouth of the Mississippi to commerce. In 1874 this commission recommended the construction of the canal already referred to, and a committee of the House unanimously reported a bill to appropriate $8,000,000 for the construction of the canal as proposed.

Mr. Eads first went before Congress with his jetty project, and after pointing out the large expenses involved in the canal scheme—that they would probably reach $20,000,000; and urging the inadequacy of a canal, he made a startling proposition, viz., to give an *open river mouth to the commerce of the world*—a broad, deep, unobstructed channel—for the sum of $5,250,000; stipulating that not one dollar of this sum should be required of the Government until he had secured a channel not less than 20 feet deep and 200 feet wide. This amazing proposition was in direct antagonism to the unanimous recommendations of the U. S. Engineer Corps. Mr. Eads thus proposed to assume the enormous financial risk involved in carrying out such a vast work.

This proposal had the effect of postponing the canal project, and Congress appointed another commission of engineers to reconsider the whole matter and report thereon. The new board went abroad during the summer of 1874 and examined many noteworthy works—among others, the jetties at the mouth of the Danube—and then returned home and made another very careful examination of the mouth of the Mississippi, and finally six out of the seven members of the commission reported in favor of the application of the jetty system with this difference: Mr. Eads proposed to construct jetties over the bar at the mouth of the Southwest pass; the committee recommended their construction at the mouth of South pass. Southwest pass was much larger and discharged a greater volume of water than South pass; there was deep water at its head, and it carried 14 feet over the bar at its mouth. In the case of South pass there were two bars—one at its head with 14 feet of water, and one at its mouth with not more than 8 feet. These facts show the reason why Mr. Eads preferred the larger pass. Convinced by the clear statements and able reasoning of Mr. Eads, the House committee reported a bill recommending Southwest pass, and it was passed. But when the bill came before the Senate it was amended by substituting South pass for the proposed improvement, and in this form it was passed and became law.

Mr. Eads now closed his contract with the Government, and engaged in the vast work, and in spite of the supreme difficulties which beset the prosecution of it, his success was complete and brilliant. On the 8th of July, 1879, he had secured the maximum channel required by the terms of the law, namely, a channel 26 feet deep, 200 feet wide, and a central depth through its course of not less than 30 feet. When Mr. Eads began the work there were only 8 feet of water on the bar; there are now 30 feet, admitting of the passage of the largest vessels afloat.

Since that time Mr. Eads has rendered very efficient service on the National Commission for the Improvement of the Mississippi River; and he has not been

silent in the discussion of the canal project for connecting the Gulf of Mexico with the Pacific Ocean. He maintains that a railway is far more desirable than the level ship-canal project of M. de Lesseps, and some time ago presented a scheme for the building of a railway capable of transporting vessels of the greatest tonnage from ocean to ocean. In support of this proposition he appeared before a committee of the House of Representatives.

According to a statement made by Mr. Eads, and published in the *Missouri Republican*, work has actually been commenced on this railway in the neighborhood of Minatillan, and great confidence is felt by many scientific men in its success. The locality for the proposed ship railway is 1,200 miles nearer New York than the Panama Canal.

In the life of Mr. Eads we observe a splendid example of living for a purpose. From his youth he appears to have aimed to accomplish great and useful results, and the record is one which the proudest might covet.

EXPERIMENTS IN PSYCHOLOGY.

A SCIENTIFIC CONFERENCE IN BROOKLYN, N. Y.

WE have obtained a report of a recent gathering of friends of science at the residence of Dr. I. K. Funk, at which representatives of five denominations were present among the Brooklyn clergy, as well as medical and literary people from a distance. The following is a *rêsumê* of the paper read by Professor E. P. Thwing and of the experiments which accompanied it:

THE TRANCE STATE.

1. What is it? The trance is a kind of sleep, more or less profound, more or less continuous. It may last a moment or it may last months; it is "the supreme expression of involuntary life."

2. Is it natural or artificial? Both. It is artificial when produced by the will of another. It is a condition into which some pass without effort on their part or others.

3. Is it a disease? It is an abnormal state, and yet the trance, or "transit," as the word indicates, is too common to warrant the use of the term "disease" in all cases. Not only women and children, and persons in feeble health, but men of vigor and active wills are subjects of this experience.

4. What are some of its forms? Ordinary sleep is a kind of trance, and the phenomena of dreams are not unlike the experience of those who are controlled by a psychologist. Somnambulism is another. Intoxication produced by liquor, or the ecstasy resulting from hachisch and opium are still others. That wild hallucination of various intensity and manifold forms, known as "Panic," is really a trance. A dozen kinds of trance are now studied. "It unlocks half the secrets of the world's delusions."

5. What is hypnotism? Artificial sleep induced by an operator who is able to concentrate the entire attention of a "subject." It is not like ordinary sleep, gradational, but sudden; not intermittent, but profound; not volitional, but automatic, without guidance or personal restraint of the subject.

(*a*). It is not gradational. We gradually fall asleep, and often after repeated efforts, interspaced by wakefulness. A word or gesture is enough to produce hypnotism or trance. [By a quick gesture Prof. T. threw a patient into a trance.]

(*b*). It is not intermittent. We wake from an ordinary sleep, at least enough to turn over or readjust our bedding, and sleep again; but the trance subject is usually motionless like one chloroformed—stiller even; for stertorous breathing accompanies anæsthetics oftentimes, and

the coma of disease has convulsions frequently.

(*c*). The trance state is not volitional; *i.e.*, the guidance or self-control of the subject is suspended. The vital functions, like breathing and swallowing, go on automatically, as when awake, but the other activities and the sensations are controlled by the operator. He wakes when a word is given. If left by the operator, the subject passes into an ordinary sleep and wakes of his own accord within a few hours, or sooner, if so trained. [A surgeon, present by invitation, applied tests which satisfied all of the genuineness of the phenomena.]

6. What is Unconscious Chronometry? Dr. Carpenter, of London University, uses the phrase to indicate a time-telling power which the mind has when asleep. You say as I do now to the patient—"Count slowly, aloud. When you get to five you will find yourself asleep, but your mind will keep up the unconscious chronometry, and at twenty-five you will be wide awake." It illustrates the power of a dominant impression.

7. What are *Mental Therapeutics?* The treatment of a disease by turning a man's mind upon himself. The emotion of hope, or of wonder, or of expectancy is "incomparably more powerful, both for immediate and long-enduring effects," says Dr. Geo. M. Beard, *North American*, July, 1879, "than hydro or electric therapeutics in many cases." The expectation is enough without the trance, unless we choose to call that very attitude of eager, absorbed, and wondering waiting, or "faith" itself a tranciform condition. Not the feminine, immature, the dull and credulous alone, but scholars and skeptics are also open to these influences, as the biographies of our greatest men and the testimony of every intelligent physician prove. My family physician gave a powerful sedative to a woman. The husband wondered at its power, and asked that he might smell. The doctor, just to experiment, substituted another vial containing an inert fluid, but warned him not to inhale much of it. The effect was immediate. It went "all over his head." The "vitalized handkerchiefs" are of the same nature and work in the same way. Simple-minded people are paying ten dollars each for them. That relief is had can not be doubted. Brown-bread pills would do just as well if only "mixed with faith."

VITALIZED HANDKERCHIEFS.

At this point of the conference, Rev. Dr. Funk's written statement was made as follows:

On April 7, Mr. Lanworth, of West Meriden, Conn., was sent from his boarding-place, 53 Nevins Street, to my residence, 196 Schermerhorn Street, with a handkerchief which Prof. Thwing had loaned him. Mr. L. was assured that the handkerchief was an ordinary one. He was told to hold it before his face to show that it had no magical power aside from the mental impression with which Prof. Thwing chose at any time to connect it. "When you get to Dr. Funk's house, however, and wrap it about your hands you will find," he said, "that all sensation ceases in them, and if it be placed before your face it will act like chloroform." He came to me and I applied the handkerchief to one hand and then to the other. They became numb, so that the puncture of a needle was not felt. The handkerchief was then slowly brought by me toward his nostrils and he instantly became profoundly insensible. Neither could I nor two young men who accompanied him arouse him. A short time afterward Prof. Thwing arrived, and with a word brought him to a normal condition.

SCIATICA CURED.

A gentleman from this city arose and testified to the following facts: "I met this operator a month ago casually in a public building, and requested him to see if he could relieve me of sciatica of nine months' standing. To his question whether I had ever been controlled by any psychologist, I said that I had not. It took but a moment to settle the fact. He then turned his attention to my thigh,

and by manipulations gradually seemed to draw the discomfort away, occupying not more than two or three minutes. Only a slight stiffness lingered for a day or two, and since that time I have had no trouble." This testimony was unlooked for, and to no one more of a surprise than to Professor T. Another present, taking courage, asked him to do the same to his lame limb. In two minutes he was walking with rapid and elastic step, and said, "Only a prickling sensation in my foot remains."

The upshot of all these experiments seems to be this. The confident expectation of a result is one of the best helps in bringing about the result. Not every one is able to create certainty of conviction in others. Some are gifted with this power. They will carry a jury or lead a forlorn hope by a certain indefinable yet irresistible magnetism that compels men to capitulate to their sway. That this power has a place in medical treatment, as it surely has in moral discipline, is clearly shown by these psychological experiments. But to call these faith cures "in the name of Jesus Christ," when they are fruits of faith in *man*, is both irrelevant and irreverent, and with "ten dollars in advance" is a charlatanism which this conference did well to rebuke publicly.

POSITION IN SOCIETY.

NOT long since I was reading a little article about the cities of the United States, in which it was stated that, generally speaking, in New York City wealth was what gave position in society; in Boston it was intellect; in Philadelphia, family; in Washington, office. However correct this might be, none of them, I thought, were true tests of worth. Nor yet do I think that in the good millennium time that is coming will there be a great leveling in society, whereby the rich and the poor, intelligent and ignorant, good and bad will be jumbled into one mass, and all considered on an equality; but that there will then be still nicer distinctions made than now. In that good time coming, wealth, office, family, even intellect will not be the tests of position in society. Yes, when the millennium comes! In imagination I am there now—not that I would even think disparagingly of the glorious present age; but are we not to grow in knowledge, wisdom, goodness, and happiness as the countless years roll on? In thought I am carried forward to that era of golden sunshine when there will be not a dark spot in all the earth, but everywhere has the world been enlightened by glad tidings of Gospel news.

In a city of surpassing beauty, where order, cleanliness, and peace prevail, in fancy I wander along the pleasant streets, drinking in the pure air and loveliness of the scene. Is it the social, intellectual, and moral atmosphere of the place that with the rare purity of nature's elements and the beauty of all about me makes my life-blood bound along in such wild freedom that I stand thrilling in the joyous consciousness that I am a part of this perfectly healthful existence, feeling it to be an exquisite happiness to live and breathe?

As I mingle with the intelligent, good-looking people, I become familiar with the name of one Mr. Sterlingworth, who seems to be a noted man the wide world over, for from bits of conversation that I gather, I learn that he occupies a very high position in society, and is much esteemed by the people of the whole earth; I use the term, "the whole earth," advisedly, for by means of air-balloons and other contrivances, speedy communication may be had between a person who resides at the North Pole and his neighbor at the South Pole, or between one in San Francisco and his friend in China.

But this day appears to be one of

special note. Numerous air vehicles are rapidly alighting in the city, and the people are thronging toward a shady park. I accost a man just arrived from New York City, and respectfully inquire the meaning of this assemblage of persons.

"Ah, do you not know?" he answers politely; "it is a General Assembly from all parts of our world, and is the annual meeting for the purpose of consulting how to further the best interests of mankind. Delegates from all parts of the world are to be here; and one special item of interest at this meeting is to assign to Mr. Sterlingworth the highest position in society; for all agree that he is the richest man in the world, and worthy to be crowned with all honor. Come with me."

"No," I answered, and turned away. "So the richest man in the world is to be crowned with honor." I thought to myself in great anger: "Some ignorant boor that has robbed and cheated others into poverty, and now by his ill-gotten wealth and domineering spirit, he controls men that are his superiors in mind and heart." But here comes a Bostonian. "Allow me to inquire what you find in this man Sterlingworth to admire?"

"A learning and wisdom that is more than can be obtained from man alone," came the reply.

I was much out of humor. Perhaps he might be only some low dog who with cunning and gold had outwitted this people; of course he was possessed of some sort of knowledge to so befool the world. I now see a man just arrived in a palatial car marked in gilt letters, "Philadelphia." I shall ask this Philadelphian if he so highly esteems learning and gold.

"Pray, good sir," I began, "be so kind as to tell me of what note is this man, so honored here to-day?"

"Ah, my friend," he replied, "this man knew his Father's will and did it; he is one of whom the great Christian family needeth not be ashamed, for he is a most worthy member, a true descendant of the Israel of God."

At this I was somewhat perplexed Turning to a Washington delegate I asked: "Is this man Sterlingworth to be the next President?"

"No," he replied; "he is not the one best fitted for that office, although he is the most highly honored man in the world. In a way, better suited to himself, he has accomplished the greatest good, and is deserving all homage given him."

In a state of perplexity I wandered away from the place of interest, for I did not wish to see this man so honored above his fellows. But finally I turned back, for curiosity had gotten the better of me; I would see this man for myself. But when I returned and tried to make my way through the crowd, I could get but a glimpse of his countenance; that I saw was fair, placid, intelligent, noble; and I heard some closing remarks of one of the speakers; he was saying: "Rich, aye, riches of mind and heart; and to belong to the Christian family is to be a member of the highest family ever known by the world. One who goes about doing good, whose life-work has been that of making the best and most of himself and others, and whose influence has radiated great good. Truly honor and happiness are deservedly his in this present life. And may we not believe that such will be still more highly awarded hereafter by our Father in heaven?"

At this I was the more bewildered. "'Tis not the way the world does," I remarked to a by-stander.

"Oh, yes, in this millennium time character is the standard of excellence."

"But may you not be mistaken in people?" I queried.

"Oh, no, sir; in these times every man knows his neighbor as himself; and every man knows what he himself is, and what work he can best do, for no one is without some occupation."

"Pray, sir, is it possible that I can at-

tain to such great knowledge?" I anxiously inquired.

"Very easily, sir; only get yourself a pair of spectacles from the gnome and you can look into a person and see just what his character and talents are; and best of all, you can turn them inwards and see just what you, yourself, are. I am surprised that there is a person living in this age without owning a pair of these most useful spectacles."

"Most wonderful!" I exclaimed; "tell me where they are to be had, and I shall be without a pair no longer."

"Come with me up the next street," said my new acquaintance, "and I will take you to a phrenological office where dwells a wondrous gnome who keeps these invisible spectacles. It will require some study and practice to enable you to rightly adjust them so as to see things as they are, and not as they may appear to be."

"Just what I would like," I replied, "to see people, not as they sometimes appear, but as they actually are."

Together we hastened on to where dwelt the keenest-looking little gnome, who, with cap in hand, bowed us into his elegant domicil. In which place I applied myself most diligently to acquire an understanding of the intricate workmanship of a pair of these curious spectacles. And ere long I found myself looking through a pair with much clearer vision than I had ever before imagined of seeing, and I said to myself: "Heretofore I was blind, now I see." Then I went out and stood on a street corner with eyes looking through my new spectacles that seemed to inquire of each passer-by, "What is this man?" And so satisfactorily I read the answers that I might have stood there in mute wonder until I had become a petrified interrogation-point if the moving crowd had not jostled me back into the present time.

SARAH M. BIDDLE.

THE UMBRELLA-BIRD.

TROPICAL America is the home of a vast number of living creatures which are strangely organized. From the ant to the monkey, from the humming-bird to the black vulture, the naturalist finds there abundant material to feed his curiosity, and to tax his powers of analysis and classification. One of the more interesting species of birds whose habitat is the rivers, is the umbrella-bird. Strictly speaking, there are three species of this bird, all being remarkable for having a crest of long and slender feathers drooping over head and bill, and also an elongated plume extending from the neck down upon the breast. These birds are rarely seen apart from their homes in the trees of the islands of the South American rivers. As described by Mr. Wallace, the umbrella-bird is about the size of a crow, averaging eighteen inches in length. Its color is entirely black, but varied with metallic blue tints on the outer margin of the feathers. It is a powerful bird, the bill being very large and strong, the feet short, and the claws curved. Were it not for the crest and neck plume, it would appear to an ordinary observer nothing more than a short-legged crow. The crest of the male bird is, perhaps, the most fully developed and beautiful of any bird known.

This crest is composed of from fifty to eighty feathers, is five inches in length, and about four and a half wide, somewhat resembling a beautiful blue umbrella. The shafts are white, and the plume glossy blue, hair-like, and curved outward at the tip. When the crest is laid back, the shafts compose a compact white mass, sloping up from the back of the head. Even in this position it is not an inelegant crest; but it is when fully opened that its peculiar character is developed. The shafts then radiate on all sides from the tip of the head, reaching in front beyond and below the top of the beak, which is completely hidden from

view. The top of them forms a slightly elongated dome, of a beautiful shining blue, having a point of divergence rather behind the center, like that in the human head.

The other singular appendage of this bird is the neck-plume. This is a long cylindrical plume of feathers depending from the middle of the neck, and either carried close to the crest, or puffed out, and hanging down in front. The feathers lap over each other scale-like, and are bordered the same as the crest with fine metallic blue.

"On examining the structure of this plume," says Mr. Wallace, "it is found not to be composed of feathers only, growing from the neck, as seems to have been hitherto supposed. The skin of the neck is very loose; looser and larger, in fact, than in any bird of which I know. From the lower part grows a cylindrical, fleshy process about as thick as a goose-quill, and an inch and a half long. From this grow the feathers, to the very point, thus producing the beautiful cylindrical plume quite detached from the breast, and forming an ornament as unique and elegant as the crest itself.

"When in motion, either flying or

THE UMBRELLA-BIRD.

feeding, the crest is laid back, and the plume carried close to the breast, so as not to be conspicuous. When at rest in the daytime the crest is fully expanded, and the plume is rather enlarged and hanging forward. At night, when asleep, all the feathers are puffed out to their fullest extent, and sometimes the head is turned so as to bring the dome of the crest on the middle of the back. It then presents a most singular appearance, the head and feet being quite invisible, the plume and crest alone being conspicuous amid the mass of feathers."

Another species of this bird has a large, naked red spot on the neck, and only a small neck appendage. It is found in Costa Rica; and the third, with an immensely elongated neck-plume, seems to be peculiar to Ecuador.

Its note is a very loud and deep cry, and from this characteristic the bird has received its name, *Ucramimba*, which signifies piper-bird, from the tribes of the Rio Negro. It utters its cry early in the morning and in the afternoon. It frequents the loftiest trees, but is said to build its nest rather lower, which is formed very roughly of sticks, and the young birds are said to be very naked and ugly.

POLITICAL ECONOMY.

TOWARD the middle of the last century, when France, oppressed by the so-called nobility, and still burdened by taxes caused by the wars and extravagances of Louis XIV., was experiencing the bad effects of the Mercantile System, Quesnay and a few other earnest, thoughtful, and self-sacrificing men conceived the idea that all the misery they beheld must have originated in some violation of natural law. They consequently undertook to ascertain on what natural principles human society was based. The conclusion to which observation and reflection brought them was this: that society is based upon certain natural rights, chief among which are freedom of person, freedom of opinion, and freedom of contract. These they believed most conducive to human happiness, and all violations of them inimical to the human race. They were most clearly of the opinion that governments should only be instituted for *preserving and defending the rights of the individual.*

The germ of social revolutions lay in this idea. Who can tell how much of the inspiration of our immortal Declaration of Independence may have been derived from the writings of Quesnay and this little band of peace-loving philosophers? Upon these natural rights as a basis Quesnay essayed to found a science of the rights and duties of mankind in all human relations, including relations to each other, to government, and to property. This science he named Political Economy. Its scope comprehended all ascertainable laws pertaining to man as a social being.

Later writers, finding this field too broad for one science, have divided it. Such laws as appertain to man's relation to government are now made a part of Political Science. Such as pertain to his relations to individuals, as, *e.g.*, the laws of heredity, are frequently given the general name Social Science, though this term, in its broadest application, includes all natural laws that appertain to man as a social being; while the term Political Economy is not only reserved for that portion of sociology which treats of the relations of mankind to property, but is restricted to a consideration of the natural laws which govern the exchanges of property, or, in other words, which govern values. Hence it is variously termed the science of wealth, the science of exchanges (Whately), and the science of values (A. Walker and Perry). That its field is not narrow, will be seen when we have considered what things may be wealth, what things are subjects of exchange, what things may have value.

Wealth, as the term is used in Eco-

nomics, does not signify a large amount of property, but anything that has value, *i.e.*, which may be bought and sold, or, in other words, exchanged for money or any other thing whatsoever. A book or a pen is as truly wealth in this sense of the word, as are houses or manufactories: and so also is labor of all kinds, whether in the form of physical, mental, or moral services, because all these services may be the subjects of exchange, *i.e.*, may be bought and sold.

Political Economy assumes the right of human beings to possess and dispose of things, material or immaterial — of such things, in fact, as are included in the *res* of Roman law; in other words, it assumes property rights.

The species of property, or Economic rights, which may be exchanged or sold, either absolutely, or for a time, are for convenience divided into three classes:

1st. Property rights to material things, such as houses, lands, manufactories and their products, agricultural products, works of art, and also material things which are not the result of labor.

2d. Labor or service of all kinds; brain labor as well as hand labor; the labor of bankers as well as of bakers; of clergymen as well as of carpenters; of doctors as well as dress-makers; of lawyers and day-laborers, of merchants and mechanics, professors and plumbers, teachers and tailors, etc. All these sell their services, the result of their strength or knowledge or skill in certain departments. Their labor is wealth—has value. It is, however, *immaterial* property. Though it can not be seen or touched, it is none the less wealth.

3d. What is called *incorporeal property*. To this class belongs credit. Credit, in Economics, means an existing right to future payments. Some of its leading forms are notes, cheques, bonds of nations, States and individuals, and bills of exchange. The most common form (if we except book-credits) appears in notes and cheques. These are the subject of an enormous trade. The shops where they are most largely dealt in are called banks. Some little conception of the amount of business done by these credit-shops may be formed by observing the clearing-house reports of our larger cities. The clearing-houses are organized to facilitate the daily payment of the cheques held by the banks of a city against one another. The total of the claims thus settled is called the *clearings*. The clearings of the New York clearing-house for 1880 were $38,614,448,223 — more than five billions more than those of London itself—making a daily average of $121,000,000 through this one agency. Had all these payments been made in gold coin, without the employment of clearing, the gold would have weighed 74,000 tons! Or if the gold had been actually paid on the "differences" or "balances" in the clearing-house, it would have weighed 598 tons. In fact, however, the settlements were made in United States notes and gold certificates of deposit. In the London clearing-house the use of money for balances is entirely dispensed with, clearing being made through the Bank of England; and two or three dozen clerks there clear every day, without the use of a coin or note, cheques and bills to the average amount of $100,000,000. Without this machinery, 200 tons of gold would have to be moved every day over distances varying from yards to miles.

It would be interesting to consider this new economic force, which, by the fellowship it establishes among the banks, has proved, in more than one crisis, of great benefit to the community. In the panic of 1873, for instance, the banks of New York City checked the demoralization by combining their entire resources in the issue of loan certificates to the extent of $25,000,000. We can, however, only remark that no such extension of credit transactions can take place save among people who have a keen sense of mercantile honor. By the constitution of the New York clearing-house, any bank may be expelled from membership for sufficient cause; and in another large city, a bank was, in 1881, compelled by its associates to withdraw from the clear-

ing-house, on account of having given the United States Revenue Commissioner fraudulent returns of its taxable deposits. We here see the disciplinary power banks may have over each other.

Thus far we have considered only one kind of incorporeal property, viz.: *credit*. Another species is the "good-will of a business." When a person buys out a manufacturer, or one engaged in other business, the price he will pay is not governed merely by the value of the land, brick, mortar, machinery, or other stock there. Often, indeed, these are but a minor consideration, and the chief motive to the purchase is the amount by which the buyer's future profits will be enhanced by the use of the seller's name or trademark, or, in other words, by the reputation his wares have in market. This consideration is what, in law, is called the "good-will of the business"; and every man of affairs knows how valuable it often is. Boswell tells us that Dr. Johnson was once appointed executor of the estate of a famous brewer, and that, in this capacity, it became his duty to sell the business. "When the sale was going on," says Boswell, "Dr. Johnson appeared bustling about, with inkhorn and pen in his button-hole, like an exciseman; and, on being asked the value of the property to be disposed of, replied: 'We are not here to sell a parcel of boilers and vats, but the *potentiality of growing rich beyond the dreams of avarice.*'" This was the Johnsonian phrase for the "good-will of the business." Now this *potentiality*, though it was the result of labor, was not corporeal. Yet, it could be bought and sold, and was therefore *wealth*. The same is also true of the practice of a lawyer or a physician. Copyrights and patent-rights are other forms of incorporeal property.

Having ascertained what things may have value, our next step is, to learn the cause of value. And just here have arisen more fallacies in the treatment of social and labor questions than, perhaps, from any other source. Many persons, and, unfortunately, some writers of excellent repute, have supposed, because they saw that most of the things which have value were produced by labor, that labor was the cause of value. They confound the thing which has value, with its value. *Producing a thing is not producing its value.* The value of anything depends upon the estimation in which it is held, and is measured by what one will give in exchange for it. How much money (or anything else) one will pay for an article, depends upon the relative estimation in which money (or whatever is paid) and the article in question, are held. Value is a relation. *There is no such thing as intrinsic value.* The phrase is absurd, and when applied to things commonly valued, is misleading. There is nothing on earth of which the value does not change with time, place, or other circumstances.

If labor were the cause of value, what would be the cause of the value of labor? The exchange value of all things, labor included, depends upon human desire, combined with the means of satisfying that desire, or, in economic phrase, on *demand*. Before a man will labor, something must have value to him, to obtain which he gives his labor. Value, then, precedes labor. How much labor one will be willing to expend to satisfy a desire, depends on the strength of the desire and the ability to labor. If many people desire the same thing, and its quantity is limited, the more labor will have to be given to secure it, and *vice versa*.

Though neither labor nor cost of production can cause value, they may indirectly affect it, through their effect on supply. And here let us say that demand and supply are reciprocal terms; for demand being the offering the commodity possessed for the one desired, and supply being the offer made by the one possessing the object of desire, it can not be otherwise than that either term of an exchange is demand, when regarded in connection with the one offering it. When we understand that it is demand that gives value, it will be at once perceived that any change of demand makes a

change of value. The practical bearing of this law will appear when we consider the evils that may arise from a failure to apprehend it.

We have now, in the definition of Economics, or Political Economy, of wealth, value, demand and supply, and a knowledge of the cause of value, the fundamental concepts of economic science. From this point, the science becomes deductive. Of its deductions we can not speak here, save to indicate a few of the evils that may arise from erroneous notions in regard to its fundamental principles.

A wrong idea of wherein wealth consists, leads logically to unjust taxation. The eighteenth century Economists of France, notwithstanding their valuable contributions to the science, held the erroneous notion that land was the source of all wealth, and that the annual increase of a nation's wealth was the net annual product of the soil. Turgot, the Prime Minister of Louis XV., convinced of the truth of this doctrine, conscientiously endeavored to administer the finances of France in accordance with it. He therefore made the whole onus of taxation fall upon the land-holders, while manufacturers and all others who were adding to the nation's resources, wholly escaped bearing their share of the burden, notwithstanding the value of their products. "Thus," as Blanqui says in his "History of Political Economy," "the proprietors of lands were made to bear the fiscal consequences of an error in doctrine, and the Government, with the best intentions possible, was ruining them, even while proclaiming them pre-eminently *the* producers."

Another false idea, generally held until the time of Quesnay, was that wealth consisted chiefly of gold and silver. The so-called "Mercantile System" was one of the outgrowths of this doctrine. Every nation endeavored to obtain all the gold and silver possible from other nations. Laws were even enacted prohibiting the export of the precious metals, and thus international trade was prevented in so far as it required an export of those metals to pay balances. This system prevailed in Europe for two centuries, and gave rise not only to tariff-wars, but to fifty years of war with all its blood and desolation. Nations had not then learned the very simple fact that in a trade both sides may gain, because each may receive something of more value to itself than that with which it parts. They supposed that what one nation gains by international trade, another must lose. Moreover, though Europe had seen Spain grow more and more impoverished, despite the argosies of gold and silver from her American colonies, all nations still held to the doctrine of *balance of trade*, *i. e.*, that if a nation did not have such an excess in value of exports over imports as to receive a balance in money, the trade was not advantageous. Quesnay exposed this error: so, later, did Adam Smith; and after him, J. B. Say; and since then, Bastiat, Blanqui, J. S. Mill, and nearly every economist of this century has testified to its fallacy. Political Economy thus adds its influence to that of Commerce, to maintain peace among nations, by proving that the good of each is best promoted by the well-being of all.

A wrong theory of the cause of value has been nowhere, perhaps, more productive of mischief than where it has given rise to errors in finance. Without going to England or France for examples, of which they afford many, we shall find in our own country and our own generation sad confirmation of this truth. The extensive issue of paper money during our civil war diminished greatly the value, *i.e.*, the purchasing power, of each unit of the money. Owing to the large increase in quantity, and the fact that the area for its employment was narrowed by the withdrawal of the Southern States, the value of the money was cheapened, and more of it had to be given to obtain a given quantity of any commodity. Consequently, the Government itself had to pay greatly higher prices for everything required to carry on the war, and thus the national debt was increased by a

needlessly large amount. Moreover, this excessive issue of money altered in fact the value of every contract in the United States solvable in money, as these contracts were paid in a cheapened currency, and injustice was thereby wrought.

No less an error was the subsequent contraction of the currency from 1875 to 1879. This so diminished the amount of money in the country, that all persons had to give more labor or more commodities of some sort, to obtain a given amount of money; or, in other words, there was a fall of wages and prices. In economic phrase, there was increased demand for money. In consequence, persons who had incurred obligations under the preëxisting money scale, were obliged to give more days' work than before to discharge those obligations: so that many a poor man lost his home by the foreclosure of mortgages, and tens of thousands of laborers and mechanics, merchants and manufacturers, had to face a financial ruin for which they were in no way responsible. The burden of national taxation, too, was thus made to fall more heavily on the people; for, to pay one's share of the national debt (though it be by indirect taxation), every person must give more days' labor when lower prices rule.

Not a few of the labor troubles of today may have had their root here. But here we enter upon problems which do not come within our limits to discuss. Enough has, however, we trust, been said, to make it evident that, since human weal or woe is linked to so small a thing as a wrong definition of wealth, or a wrong theory of the cause of value, no one can afford to be ignorant of the principles of Economic Science, and their practical application in human affairs.

Meriden, Ct. EMILY J. LEONARD.

THE PLANET SATURN.

THE specialist can never believe that his subject is narrow: to him it widens and widens. When the theological professor said to the astronomer that his department was the Old Testament, the astronomer replied, "So is mine, with the difference that mine is older." On the other hand, when the astronomer boasted to the entomologist that his department covered the whole earth, the entomologist said, "Insects do."

I have perceived, in studying the planet Saturn, how many incidental questions come up in other departments of physical science; I must know something of chemistry, of natural philosophy, and especially of celestial mechanics and mathematics. Saturn alone showed itself a universe made up of systems within systems.

To the eye, Saturn is far less conspicuous than Jupiter. It is smaller; it shines with a pale, white light; it might be mistaken for one of the countless stars. The first look with a telescope is a revelation. Like Jupiter, it has its satellites; like Jupiter, it has bands crossing its surface nearly parallel to its equator; but, unlike every other planet we see, it is surrounded by a ring generally so inclined that it stands out like a plateau in front of the planet. It is not a ring, it is a bottomless placque.

Why is Saturn thus girded about, like a high-priest, among the hosts of the firmament? This ring is so posited around the ball that permanence of relative position of ball and ring is secured. In a few hours, ball and ring turn around on their axes and show to us different faces; but another change is going on slowly in years, that of the inclination of the ring to our line of sight. From this change of inclination the ring is now a broad, flowing river of light surrounding the ball; the position of earth, Saturn, and sun changes, and anon it is a silver thread crossing the glowing disk, and, once in the average life of man, it defies the power of ordinary glasses; it presents its

edge directly to us, and we can not see it.

We say "Ring," but the ring is made up of many. An ordinary glass will show that this broad, flat ring is divided, and dark bands of sky show through the opening rifts. A narrow ring seems to have separated from the original one, as if parting the close companionship; the most powerful telescopes show other separations. We detect these changes mainly at the extremities of the longer axis of the plane of the ring.

Separating from the *inner* edge of the plane of the ring is what is called the dusky ring—seeming to tend toward the ball. Reflecting little light, it extends a wide surface toward the ball, seemingly shelving like the sea-shore toward the ocean; and, when seen obliquely, it appears to lie upon the ball, and was long talked of as shadow, although no light was there on sea or land to cast shadow in that direction. There can be little doubt that this crape-like, dusky ring has changed in the last century. Are these changes the result of the action of the ball upon the substance of the ring? When the ring is so tipped that the bright edge toward us is projected upon the ball, dark markings appear upon the ball; they border the ring on one side as the dusky ring does on the other; we call them *shadows*, but are they shadows? They do not follow the curve of the ring; they do not follow the usual law of light and shade. So, too, upon the brilliant ring are very black irregular spots; we call them shades thrown by the ball; but the ball shows no prominences which, by intercepting the sunlight, could throw such shadows.

The astronomical observer is fortunate if he can call in some *in*experienced friend, if possible an artist, to assist his judgment in lights and shades. Above all other combats, the experienced observer has that with his own perceptions and favorite prejudices. If he has conceived an hypothesis, it becomes his tyrant and oppressor, warping judgment.

Minute objects which will bear no illumination of the telescope, but must be seen in intense darkness, are detected by the eye, but can not be measured with apparatus. To these, different eyes must be called in place of micrometer, and the opinion of the novice as to which is larger and which is brighter is a wholesome correction to the prejudiced observer with his pet bias.

If we look at Saturn only for its picturesque interest, it is wonderfully beautiful. Its variations from uniformity add to its charm. It is not a sphere; it is perceptibly flattened at the poles. Surrounded by the broad, bottomless placque, it is not centrally posited within it, but is visibly on one side. Accompanied by eight satellites, these circle around it in such different orbits, at such different distances, with such different rates of motion, that the configuration of ball, ring, and eight moons never repeats itself. Now, the moons range themselves in a straight line on each side of the ball as sentinels; now, they cluster around one point of the ring as jewels dropped from the circlet; and again, they form a curve as a coronet above the central body.

Like the traveler in mountain regions who tries to think, "Given the mountains, could I gather them together into the picturesque slopes and hills and dales of the vista," so the astronomical observer learns his impotence when he attempts to conceive the outlines of beauty in the arrangement of points of light. You will never see the same combination a second time. If you changed the grouping of moons in one line only, you would make tens of thousands of changes; if you consider the changes of inclination and of distances of these eight moons, of their combinations with Saturn, and Saturn's changing position of ball and ring, you can never exhaust the variety of the celestial kaleidoscope.

Let us consider the little moons themselves. They pass and repass one another; Titan, with its orange light, comes between us and the pale Rhea; Tethys, with its peculiar sparkle, is followed by

the faint Dione; Euceladus and Mimas cling for a while close to the ring, then shoot out with hasty step and quickly return; while afar off, distant many times the diameter of the planet, shines Japetus, now brilliant as Titan, now faint as Dione. Hyperion, the last discovered, is seen only with the largest glasses.

We might think these names absurd; but some nomenclature is necessary; we acquire a habit of speaking of them as members of a family, and so familiar do we become with their peculiar features, that if the family of Saturn passes in its orbit near a *star*, we know at once the stranger in its solitary fixedness.

Modern scientists consider the rings and the moons to have had a common origin; that the rings are made up of crowded moons not yet separated. If the satellites have, in different ages, separated from different portions of the rings, it seems likely that the rings are not homogeneous. The rings show lighter and darker shades, but scarcely the variety which is so marked in the moons. Titan and Rhea are so unlike in color that any ordinary eye would see it at once.

I know of no telescope which shows other than a smooth edge to the ring; roughness may be indicated by the shadows. Larger telescopes in more favorable climates may lead to the detection of inequalities of surface; new moons may be found; the eight known moons may develop duplicity, as they seem now to show variability.

There is always work for *small* telescopes, and into this work women should come, and especially *young* women. The very faults of a girl's education should lead her into the study of nature. She is trained to observation of minute detail; her eyes and her perceptive faculties are always developed; she is learned in shapes and forms, colors and positions. Her very needs should lead her to the study of Nature, for Nature must be studied out of doors, in good air. The most thoughtless girl is awed when she first looks through a telescope and sees Jupiter or Saturn, and the step from the beauty of the vision to the question of cause underlying it is quickly made. For beyond all scenic effect is the beauty of the *law* by which permanence and stability are secured. Where fancy fails to depict, mathematical computation traces the curves of beauty. If the earth shows His handiwork, if the sea is His, the heavens declare the glory of God.

MARIA MITCHELL.

A CONSIDERATE FATHER.—Jonathan Edwards, the celebrated theologian and the first president of Princeton College, was not only possessed of great learning in matters of a theological nature, but also knew something of human character. One of his daughters, it is said, had some spirit of her own, and also a proposal of marriage. The youth was referred to her father.

"No," said that stern individual, "you can't have my daughter."

"But I love her and she loves me,' pleaded the young man.

"Can't have her," said the father.

"I am well-to-do, and can support her," exclaimed the applicant.

"Can't have her," persisted the old man.

"May I ask," meekly inquired the suitor, "if you have heard anything against my character?"

"No," said the obstinate parent, "I haven't heard anything against you; I think you are a promising young man and that's why you can't have her. She's got a very bad temper, and you wouldn't be happy with her."

The lover, amazed, said: "Why, Mr. Edwards, I thought Emily was a Christian. She is a Christian, isn't she?"

"Certainly she is," answered the conscientious parent; "but, young man, when you grow older, you'll be able to understand that there's some folks that the grace of God can live with that you can't."

CAUSES OF MALARIAL DISEASES—SUGAR-EATING.

MALARIAL diseases, probably more than most others, are popularly supposed to be due to locality or climate. Malaria, indeed, is known to arise largely from decaying vegetable or animal matter, taken into the system by one method or another. Time would fail to tell of the cases where the accumulated vegetation of many years decaying upon the surface has proved inimical to the settlers in new countries, until the soil was well under cultivation and the crops harvested and carried off instead of decaying on the ground; of places peculiarly healthy which suddenly became noted for fevers and congestions; where land was overflowed by a mill-pond, and of the well-known malarial tendencies in the vicinity of marshes, and in countries where there are vast periodical inundations, and a hot sun to act quickly on the exposed vegetation when the water receded, notably in the African and South American low countries.

Of the miasms that come from decaying animal matter, we have more striking cases in more thickly-settled countries, where the conditions of cleanliness are neglected in the virulent typhus or typhoid, so greatly dreaded in England, and from which even the royal family were not exempt, when the sewerage at Sandingham was defective. The case of New Orleans being purged from yellow fever, or rather kept from it by enforced cleanliness under military rule, and of Memphis suffering fearfully from its own neglect and restored to a habitable condition by better sewerage, are all too recent to escape the memory of our readers as illustrations of this general law. If medical authorities were needed, we could quote many, but our hygienic authority, the "Hydropathic Cyclopedia," puts it so comprehensively, we will quote that:

"The precise *modus operandi* by which the infectious element is first produced can not be precisely explained, but the principle or law of its generation and operation is sufficiently obvious. Vegetable ferment, called yeast, it is known, is produced from decomposition of vegetable matter. This is, in reality, a rotting process, by which certain proximate principles are decomposed and so rearranged as to constitute an entirely new product. The new product, of course, holds an unphysiological scale of chemical affinities in relation to the constituents of healthy fluids; and hence, when brought into contact with those fluids, another set of chemical actions, decompositions, and re-combinations take place, by which some element is changed, modified, or destroyed.

"We know, too, that when animal secretions or excretions are in a certain decomposing state, which is exactly analogous to vegetable fermentation, they will, by being brought into contact with the blood of a healthy person, produce more

or less of a similar change or decomposition in its elements. Poisoning from dissection is a familiar illustration."

A notable illustration of this was the death of twenty-seven school children, who drank of a brook in which was afterward found the decaying body of a small animal; and cases are continually occurring where entire households using the water of some well contaminated by sewage, suffer and individuals die from this cause. We resume the quotation:

"All large collections of rotting or decaying vegetable or animal substances engender the poisonous ferment of contagious and other fevers; the grave-yards and cesspools of all large cities are constantly sending forth streams of death in all directions, and hardly a country place can be found where there are not local sources of this deadly ferment in the shape of hog-pens, distilleries, slaughter-houses, etc. And when the infectious ferment is once produced, it has the power of propagating itself whenever it can find congenial elements in the fluids of our bodies, our only defense being vigorous functions and pure blood—good health."

It is well worth our while then to look up carefully all the possible sources of contamination, and see to their immedate removal; not to allow any decaying matter about our houses, especially to look after the stores of animal matter which decays so quickly and is so very obnoxious to health, and not less carefully to the fruits and roots stored too often under the living rooms. Do not wait for the good old-fashioned "cleaning out" of the cellar, which comes with the other house-cleaning, but often comes too late to avert the "spring sickness" which may enter this open door, to throw its blight over the loveliest season of the year.

But let us never forget that our best safeguard comes from within, or rather we should say that all our care about what we breathe is of small avail, if we are not also careful of what we eat and drink. That our food and drink are entirely untainted with decay, should be one of the very first requisites which we are, as yet, very far from observing. Our drinks are too often fermented, our meats are "high," our bread might often be sweeter and more nutritious than it is, our fruits and vegetables fresher and freer from decay, and all to our very great advantage.

But besides this, we must remember that we can not go on indulging in "rich" food and over-eating, and still remain in the good condition requisite to enable us to resist malaria whenever we may be exposed to it.

A very instructive case came under my notice recently, which may be useful to others, so I give the main points. A lady, usually very strict in her diet, had learned, both by theory and by practice, that sugar is unwholesome. Enjoying an unusual degree of health, she yet found that indulgence in sugar or in highly-sweetened food produced some sort of disturbance, more or less prompt, but usually within twenty-four hours. The disturbance was slight; most people would hardly have noticed it, or would have attributed it to some other cause, or more likely have failed to attribute it to any cause; but she was a close and accurate observer, had studied much, and had brought herself up from debility to a health and strength now of many years' standing. One day she carelessly transgressed by eating over two ounces of fresh maple sugar on an empty stomach. When she realized what she had done, her first thought was, "Now, I shall suffer from this, in some way," but the day passed with no sign, and the next likewise, and being busy, she ceased to think of it. On the third day, however, she was exposed to sewer-gas; not more than she had often been before, but it took immediate and unusual hold of her; she was nauseated for half an hour, and commented to herself, "I have taken in the malaria this time, and I wonder what will come of it?" But this occupied no further place in her mind, even so much as to question what form it might take, and within a week she had a short but distinct chill, followed by a fever. She now remembered the sewer-

gas, but failed to recall the sugar until the second chill and fever compelled her attention to the circumstances of the case. She then concluded that the sugar had paralyzed the liver, and put the system in a condition to be incapable of resisting the malaria. She had a well-defined, but not very severe, three months' siege of chills and fever, which might doubtless have been cut short either by quinine or a more thorough application of hygienic remedies. However, she took no medicines, pursued her business through the day, and treated herself as well as she could mornings and evenings, and at last got quite rid of it, without any of the unpleasant "reminders" which might have followed quinine treatment.

This is enough to set one thinking, and I decided to give you the benefit of my thoughts on this subject. The liver is the great blood purifier of the system, and it is usually, if not always, out of order, as a preliminary to febrile diseases. Sugar is known to have an unfavorable effect upon the liver; indeed its unhealthiness as an article of diet is often shown in this way. I am aware that the functions of the liver are only imperfectly understood, but I believe there is no dispute about these two items. Now, I am not contending that it is sugar *instead* of malaria which causes febrile diseases, but the question which I wish distinctly to have considered is whether the free use of sugar is not often the cause of such a bad condition of the liver that the system is not able to resist the presence of malaria.

It is but fair to say that the relations of pure sugar to the system are, as yet, but imperfectly explained by medical authorities. It is known that starchy matters are changed into sugar by the liver, and disappear in the lungs; but it does not follow that because the liver makes sugar, that we should overload it with that article ready made. That might be like "carrying coals to Newcastle," and the market would be glutted. Besides, it is usually found best to let each part of the system do the work assigned to it, if we wish to keep it in good working order. If the liver be not in good working order, we do not find that sweets help it, but exactly the contrary. Nothing is worse for "biliousness" than cake, syrup, honey, candies, and sweetened food generally. This is commonly understood, though the course of it is not explained by our physiologists.

Their theories are very nice about sugar burning up in the lungs to keep the body warm; but the fact is, the lungs are no warmer than any other part of the body. Neither is it found that people who eat much sugar are any warmer than those who do not. If we should institute a comparison between the English, who eat little sugar, and the Yankees, who eat much, we should prove nothing in favor of the heat-making properties of sugar in the human body. Animal heat is largely, if not entirely, dependent upon health, and is now conceded by the best physiologists to result from the perfect working of the vital processes. Everything, therefore, that promotes health consumes heat, and if sugar does not promote health, it does not produce heat. It is not a question of chemical, but of vital action. If, as we surmise, its use predisposes to the reception of malaria, and therefore of fevers, it proves nothing, for the chills come first, and you can hardly say that one of these is a result of sugar-eating, and not the other. Argument of this sort is trivial and inconclusive, like most of the arguments about vital processes which look simply to chemistry for their solution.

Nor would I be understood as intimating that the bad results of sugar-eating are even mostly to be seen in the ready reception of malarial poisons. It is well known that many other complaints spring from a bad condition of the liver. Nasal catarrh is often so directly affected by it, that the subject can not eat sugar, cake, candy, or sweet puddings without a speedy attack, more or less severe, of bleeding at the nose. The worst case of nasal catarrh I ever knew (indeed the only directly fatal case), owed it confessedly to liver complaint, to which there was a strong

hereditary tendency, fostered by gross and continued indulgence in cake, pie, puddings, candies, and other sweets. While I would not, on any account, that public thought should be turned aside from the most careful attention to removing all sources of malaria; I may, perhaps, help some of the few whom these lines reach from predisposing their own systems to the ready reception of those germs of the disease to which they may be exposed. And in these days, when the use of sugar in all forms, and especially in confections and candies, is so rapidly increasing, it behooves us to look well to the results which we may expect from their use. The increase in the use of candies alone is something marvelous. New stores spring up everywhere, and soon assume palatial dimensions, and they seem never to be lacking in customers. Early, and especially late at night, we see their counters crowded, and even on Sunday they are permitted to ply their trade and entice from the Sunday-school children the pennies given them by their parents for other purposes. And the Sunday-schools themselves sanction it by giving candies in abundance to the children on high days and holidays, especially on Christmas and Easter Sunday. And people know that these candies are unwholesome, pernicious; that they are often adulterated with matters even worse than sugar, and colored with absolute poisons. And yet they go on winking at all this, eating candies themselves, and allowing their children to eat them. I remember the time when candies were considered bon-bons for children only, when adults no more thought of eating them than of playing with dolls and marbles, but it is not so now. Not only do they appear at dessert and refreshment-tables with other confections, but grown women, staid matrons have their little private packages of candies which they pass around to each other with as much assurance as the men pass around their cigars and papers of tobacco. "Well, what is to be done about it?" inquires some mother, despairingly. "It is impossible to keep my children from eating candy, though I have done my best to prevent it!"

Yes, I know, and a part of the difficulty lies further back. The children of to-day are not taught self-denial for the sake of health. They must have what their eyes crave, and they cry for it till they get it, and the result is fast coming of a race that are slaves to their appetites. We are slow to perceive that our higher civilization, as we call it, by bringing within our reach a greater variety of things for the gratification of the senses, entails upon us a necessity for greater self-denial, or we become the slaves instead of the masters of the situation. The boy who has not learned the virtues of self-denial is just the one who can not say "No!" to the poison cup, and who goes away down the grade of intemperance; and the girl who is always sucking at candy is preparing herself for a miserable dyspeptic, if not worse, and preparing miserably defective constitutions for her future children. We *can* learn about these things, and teach our children, if we will give the subject proper attention.

We can have plainer dishes for our tables, and use less sugar in our foods, and none at all in the shape of candies. We can teach our children that they enjoy their plain food with a better relish than dyspeptics do their dainties, and they must take their choice between the two; and, above all, we must set them the example. Do not hesitate to refuse candies when offered either for yourself or your children. Say boldly, "We never eat them." If discussion arises, say but little at the time, but say it kindly and pleasantly; say, We find ourselves better off without them; and if circumstances favor, say you would like to have them read something on the subject, and then send them some tract or article or pamphlet embodying the gist of what you would say. If we act up to our light and keep up agitation, we may hope for good general results in this direction; but if those who see the truth do not act up to it, what have we to expect?

JULIA COLMAN.

GETTING USED TO IT—No. 2.

TOUCHING the question of "getting used" to unhealthful habits and conditions of living, including also the use of food that is not best, a correspondent remarks, truly enough, that "a pudding or piece of pastry which would completely unsettle a hygienist, is eaten daily by people who seem to suffer no evil effects from it: it would seem as though the plain, abstemious liver was more easily poisoned of the two." I am asked my opinion as to the theory, or the advantages and disadvantages of "hardening the system to these unfavorable conditions." Experience and observation along this line do *seem* to indicate that when the digestive organs are subjected to a degree of ill-treatment habitually, it has the effect to prevent, and, indeed, it does tend to prevent *acute* disturbance from continued dietetic sins. "Are the uses of hardship confined to the moral world?" asked an eminent divine. "May it not be that the physical system requires for its full vigor the discipline that comes with the effort to accommodate itself to harsh natural conditions? Is there not," he urges, "a modicum of truth in the homely saying that 'every man must eat his peck of dirt,' not as a disagreeable necessity which he can not avoid, but as a condition of vigor in his digestive functions? As the bird fancier mingles bird-seed with fine gravel to insure the health of his feathered protégés, so Providence, as we call it, compels us to become robust by a miscellaneous and provoking diet." In another paragraph this observing clergyman says, speaking of his own experience: "The faculties have been less keen and patient than they would have been under a strictly natural regimen. [Reference is here made to the *moderate* use of tea, coffee, and wine]. My present habits will not, it is likely, be changed, unless circumstances compel me to change them; but I should earnestly advise young people who are forming habits, to rely on their natural resources of power, and to keep those resources full by natural means: wholesome exercise, a plentiful supply of air and light, sufficient sleep, and the 'food that is convenient.'" Further on, and in concluding his reflections upon this theme, he says: "With the best conditions there will always be friction enough; for, as the conditions are improved, the standard of bodily and mental health will be raised, and the 'struggle for existence' will be transferred to a higher plane." I have quoted thus at length from a work before me, because the writer of the letter from which these remarks are taken, is evidently disposed to treat the subject fairly, and does present the case in a most rational manner; and because he is a logically-minded man, and not given to vagaries or vaporings. Nevertheless, there are in these very sentiments, certain inconsistencies which I will point out. As to the comparison of the traditional peck of dirt with the gravel which the bird must have as a means, not only, of facilitating the digestion of his food, but without which it can not be digested; it is "gravel or blood" with the feathered tribe, to modify the starving striker's cry. But the dirt, or a little gravel, even,—the peck rounded up, in a really natural life of four or five score years,—would be a mere bagatelle for the human organism to withstand; besides, a peck of clean dirt, eaten within a reasonable time, would be far less injurious to a typically healthy man than barrels of pudding or pastry! The "clay-eaters" live, on an average, longer than excessive "pie-eaters"; and I have not the least doubt that if one of the former were to take, for the first time, as much mince pie or pound-cake as he habitually swallows of clay, the result would be violent gastric disturbance; and it is equally probable that a pie-eater who may be in the habit of living chiefly on fancy "gimcracks" would be somewhat inconvenienced by the Indian's dose of clay. It remains, after all, for each individual to decide for himself how far it is desirable

to go in the matter of self-abuse, in order that he may not experience immediate inconvenience from such abuses as he wishes to indulge in, or such as, under prevailing social conditions, he may feel himself liable to have to withstand. The fact is, that the addition to a full hygienic meal, of a substance which is absolutely innutritious, and, at the same time, impossible to be absorbed into the circulation — an innoxious and non-corrosive substance, I mean, as sawdust, or gravel— would occasion less injury to the person swallowing it, than would result from the addition of a corresponding amount of any one of certain dishes universally found upon the tables of the great proportion of our people; it being understood, of course, that I am supposing the case of a person wholly unused to both of the questionable substances. The symptoms would be dissimilar, in the two cases (unless the addition were so trifling in amount as to occasion no disturbance); the sawdust, for example, might occasion a griping in the intestines, some irritation and purgation; the mince-pie, fried pork, or lobster salad, nausea, vomiting, or a severe heart-burn, with headache.

In the one case there is simply a mechanical injury sustained which will readily heal (if absolute rest from food be allowed, the restoration would be speedy, though the original lesion were severe); in the other case there results—unless the stomach clear itself by vomiting — absolute blood-poisoning. Given a healthy man, and acute abuse produces acute disorder; chronic abuse, chronic disease. A man accustomed to an outdoor life, and to the habit of letting outdoors in during the hours spent in the home; or in other words, one accustomed to the use of pure air twenty-four hours of every day, would receive a shock upon entering the average sitting-room, and would be positively distressed, and would refuse to remain ten minutes in some homes whose occupants sit for hours entirely oblivious to their filthy surroundings. I am not supposing a den in the slums of a great city; but I have in mind many homes of wealthy or well-to-do people in town and village, and the great proportion of farmers' houses in localities where the residents boast of the salubrity of the climate and air.* This point may be illustrated by the result of an experiment made with two healthy canaries; one was placed under a glass cover which inclosed him in an air-tight space, where he was allowed to remain until he had so far exhausted the oxygen of the air and replaced it with carbonic acid, that he was in a limp and almost lifeless condition. At this point the second bird was placed beside the first. In a short time, almost immediately, in fact, bird number two began to struggle violently, and continued to struggle and gasp until he became exhausted, when both birds were uncovered to the air. Bird number two was dead; his mate recovered. This is of course an extreme case, but it illustrates well the fact that Nature endeavors to accommodate herself to circumstances; and does, in fact, take measures to extend to the last possible moment, the life of a creature under all circumstances and conditions. If I knew that I should be necessarily subjected, during the entire year of 1884, to an atmosphere which, while being extremely noxious, would still not prove fatal, providing that I were to accustom myself gradually to impure air, I would endeavor to so regulate my breathing during the present year as to be in the fittest condition to withstand the coming hardship. But, on the other hand, if the next year's test were to be beyond the power of man to withstand, I should endeavor to increase the purity of the air breathed this year, in order to insure quick work when at the close of next December my friends should wish me a "happy new year!"

So, likewise, if it should become neces-

* In ninety-nine homes of the one hundred there is no pretence of *constant* ventilation. There *is* no constant ventilation beyond the miserable pittance of air filtering in through the crevices of windows and doors. Even this source is cut off by many who can afford weather-strips or double windows, while *poor* fools often paste paper over the cracks as if insuring instead of guarding against the deadly "miasm"!

sary to live upon an exclusive flesh diet, I should gradually accustom myself to animal food; and the same with the ordinary mixed diet. But while it is possible, and so far as it is practicable, I should deem it wise for every man to accustom himself to what, as near as he can inform himself, appears to be a typically natural regimen; and when he finds himself in a "tight place," do the best he can under the circumstances. And perhaps it may be well to particularize a little, or to speculate as to what may happen to unsettle our model hygienist during the coming year, and how he may manage when brought face to face with danger. If at any time it should become necessary to call at the home of a friend who does not ventilate his dwelling, and if it seems impossible, without rudeness, to withdraw in five minutes, do the next best: shorten the call as much as you can, and repeat it as seldom as possible. Arrange to draw him into a purer atmosphere, rather than accommodate yourself to his filthy air. If you have temporarily to live in a family whose table is supplied largely with "rich" and pernicious articles, take the best you find —the vegetables, bread, the lean meat, the latter sparingly, but in preference to pastry, cake, etc. From these and the pickles, hot sauces, fat gravies, etc., beg to be excused, amiably but firmly. The case we are supposing is not in Deadwood, Leadville, or Bloody Gulch, where a man must "take" what he is invited to or run the risk of having a bullet put through him.

Eat lightly rather than too freely. If you do this, you may find that you voluntarily restrict yourself in amount, no more than nausea or lack of appetite limits the eating capacity of the friends about you, who are accustomed to the regimen. If you indulge freely, you are liable, as we admit, to be seriously inconvenienced. By pursuing a really wise course—eating moderately, "skipping" a meal occasionally, as the "pie-eaters" are themselves often forced to do for want of appetite, or using fruit only at some meals, etc.—it will happen that if there is a sick-headache, or a fever, or an "attack" of any sort, during your stay, the victim will be one of the regular members of that family and not yourself. As for coffee, tea, wine, or tobacco, one may decline them without giving offence. Quite a season of use, gradually pursued, is necessary if one aims to become hardened to the use of any of these things. They are better abstained from totally; if used at all, the less, less strong and less frequently, the better. While, I repeat, this is a matter for each one to decide for himself, and while it is often disagreeable, even vexatious, still, the conscientious person must remember that his duty is to preserve his health, that he should be allowed the same liberty in selecting his diet that he accords to others, and that, since he can not be subjected to so radical an experiment as were the canaries, nor to an extended diet of pastry or outrageously unhygienic articles of "food," he had better, while he may, live the best he knows how.

The acute disturbances which will come to him from possible indulgences will serve to "point a moral," and will be less injurious than the chronic ailments which would surely result from undertaking to "harden himself" to this sort of abuse. As to the analogy between the uses of hardships in the moral and the digestive worlds, so to say, my readers may rest assured that the reverend gentleman who made this comparison would be the last to counsel his congregation to indulge in some degree of immorality, in order that their consciences might not be subjected to a moral cholera-morbus to eliminate the loathsomeness of certain influences which might by some chance be thrust upon them in the future. The true lesson as taught by the experiment with the canary birds is, to maintain a normal sensitiveness to disease-producing causes, and, at the first indication of distress, to withdraw from the danger. We are seldom compelled, like the poor little canary, to remain *under the cover* till asphyxiated with carbonic acid or poisoned with

bad food, or debauched morally. *Hardships* are one thing; physical or moral *sins*, another. There is a better way to avoid sickness than voluntarily to swallow impure articles of food, or to breathe willingly impure air, or to undertake any injurious practice whatsoever, in order, simply, to be prepared for a possible abuse in the future.

Blessed are the pure in heart who would be shocked at the thought of an impure act; blessed, too, the stomach which is always disturbed by impure food.

DR. C. E. PAGE.*

(* Author of "How to Feed the Baby," "Natural Cure of Consumption, Dyspepsia, Bright's Disease, etc." "The Horse's Feed and Feet").

OILING THE WATCH.

THE Rev. Dr. F. R. Zabriskie somewhat quaintly illustrates a true principle of eating, in the *Journal of Education*, as follows:

I meet the old Deacon occasionally on the cars. He is not much of a gossip, and usually sits quietly thinking, and now and then closes his eyes as if in communion with better company than his fellow-passengers. And I live too much on the brink of headacne, either to read or talk on the rattling train. But to-day he proved unusually communicative. He came over to me, where I sat, and made some kind inquiries about matters which are just now of special concernment to me and my friends. In return, I congratulated him on his firm and rosy health; for his step is as vigorous, if not as springy, his eye as clear and penetrating, his frame as fitly joined together and as devoid of all superfluous tissue, and his whole person as hale and radiant of vitality, as it was a score of years ago.

"I do not know what a headache is," he remarked; "and have scarcely had an ache or pain in my life."

"How do you account for it, Deacon?"

"I reckon," he replied, "that I owe it mostly to living on a principle which I learned early in my life. You may not know that I was a factory boy, obliged to earn my own living when a mere child. For a long time it was my duty to watch the looms, keeping them clear from refuse matter and well oiled for smooth running. There was associated with me another boy, who sported a silver watch which did not keep good time. One day he broached to me his theory that what his watch needed was a good oiling, and proposed to apply some of the oil we were using on the machinery. I remonstrated with him, and tried to show that a treatment which was adapted to a cotton-factory might not answer for the delicate works of a watch. But he was headstrong and opinionated, and straightway proceeded to open his timepiece, and poured it full from the oil-can which he held in his hand. Of course, the poor little thing's life was utterly quenched in the unctuous deluge, and whether it ever recovered from the rude treatment is questionable.

"That incident," continued the Deacon, "made a practical impression on my mind, which I have never lost. That boy unconsciously oiled the entire machinery of my life, in a way that has helped much its smooth running, and not injured the woven fabric. It has taught me the science, philosophy, and religion of 'moderation in all things.' You can easily see for yourself how widely and constantly the principle can be made to apply, if one has it in mind."

"But, Deacon, how have you applied it to the matter of health?"

"Oh, in many ways; but especially as to food. It seems to me that most people, in their eating, are all the time pouring their oil-cans into their watches. They deluge their stomachs—which are the works of their whole physical, mental, and, to a great extent, their moral mechanism—with what is not adapted to them either in kind or quantity. They glut and clog the delicate machinery, so that

it is never able to work freely, and spends a good part of its spring and energy in merely keeping itself in motion. By and by it stops altogether, and then we hear about the silver cord and the golden bowl being broken at the fountain. Pshaw! Solomon said that about extreme old age. Better say—the silver watch stifled by the oil-can. There was an instance in point only the other day. It was not the pistol-shot in his hand that killed Gambetta at forty-five years old. It was the 'red-hot ball' in his stomach, that a life of '*gourmandise*'—as they call it over there, but which we flatly call gluttony—had slowly accumulated. Even during his last sickness, the doctor could not restrain the voracity of his appetite. On the other hand, you remember what Mr. Beecher told the students at New Haven, when they asked him why he kept so strong and buoyant under all circumstances. 'Why,' said he, 'I use my stomach just as I use my stove. I regard food as the fuel of life, and I always put in just the kind and quantity of fuel which will give out the most heat with the least wear and tear of the stove.'"

"How about the times and the seasons, Deacon?"

"There is a time to eat, and a time to fast. When the meal-time comes I eat a 'square' meal, though always making it a rule to stop while I feel that the oil-can has not quenched all my appetite; and I absolutely and invariably refrain from eating anything at all between meals. What is more, I never eat anything after my regular hour for tea. If prevented from taking it then, I give it up altogether, believing it to be far better to go fasting to bed than to eat a late supper. The result is, that I sleep all the night through as soundly as when I was a boy."

"I wish, in that respect, Deacon, I could plead not guilty of clogging the delicate watch-work of my brain with the 'midnight oil.'"

But here the train stopped, and the old gentleman jumped nimbly off the platform, and went down the street at a deliberate but alert pace.

DIDN'T WANT MEDICAL ADVICE ON THAT POINT.—General Wolsely, of the British Army, is a thorough temperance man, and in the Red River expedition, contrary to the advice of the physicians, he decided that no spirituous liquors should be taken for the troops. No troops ever did harder work. In South Africa his body-guard were all teetotalers, and there too the doctors predicted all sorts of ills from the lack of grog; but the result was, they had little or nothing to do. Gen. Wolsely has long held that drink is the great source of crime, disobedience, and other evils in the army, as well as elsewhere. He ought to know from experience.

KITCHEN LEAFLETS.—No. 17.

FOOD AND HEALTH—INSANITY AND CRIME—BILL OF FARE FOR JUNE.

IF there is anything in our lives which proves the great truth declared by St. Paul, that man is constantly erring against his better judgment, it is found in the eating habits of society. People know from the widespread teachings of hygiene and physiology, and from experience that certain things are unsuitable for their use as food, yet they persist in eating them and bring upon themselves the necessary consequence of indigestion, sickness, and disease more or less severe, and medical treatment more or less repugnant to their sensibilities, and expensive. The intelligent world knows that health and strength are dependent upon good food, and it is folly to expect body and mind to be sustained by a diet of innutritious articles, or of substances whose nutritive elements are greatly impaired, if not quite

destroyed by the way in which they are prepared by the manufacturer or the cook. Well-to-do people who are supposed to "fare sumptuously every day," will sit down to a table on which the castor with its biting spices, sauces, and condiments is a conspicuous object and which is deemed an indispensable accessory. It is not enough that the roast or fry comes steaming hot from the fire reeking with lard or butter, and coated with pepper and salt; more salt and pepper, and mustard, and catsup, and some extra combination of seasonings must add their fiery excitement to awaken the dull sensibility of the palate, and cups of almost scalding coffee or tea must be at hand to wash down the incongruous mixture. The poor stomach, goaded and stung by the condiments, can not half perform its work, can not resolve the food that comes in with the condiments, and scarcely half the little real nutriment there is in the food is sent into the intestines in a condition to be appropriated by the absorbent vessels and made serviceable for the wants of the body. There are thousands of people around us who eat in this way, and who are tormented with dyspepsia in one or other of its thousand forms, and are literally starving to death in the midst of plenty.

We have seen lately in the newspapers, accounts of the most horrible deeds by women belonging to the educated class. In paroxysms of madness, they have murdered their own children or committed suicide. Previously esteemed for amiability and refinement, they have unexpectedly exhibited the wildest insanity, and shocked the community by acts of terrible inhumanity. Some of our moralists may endeavor to trace the cause of such occurrences to unhappiness in the domestic relation, and hint at this or that possible irregularity on the part of husband or wife. I think, however, it were better in the first place to look at the women themselves, their mental organization, and next to their mode of living. In the case of that lady in New York who killed her children and then took her own life, I should have expected to find a very sensitive temperament, with a wide head from the ears to the crown; strong Destructiveness, Caution, and Approbativeness, and a very full development of the social organs. I think her Firmness was not very strong, and that Hope and Faith were not specially active. It is likely that she had shown indications of mental unbalance previously, which had been accounted for on plausible grounds, no one dreaming of the sad ending. But if her case were fully described, I doubt not that one important cause of the mental disturbance would be found to be insufficient nutrition. The elements of an active nervous system were not met in the food she ate, and there was a consequent decline in tone and capacity, until intellect and moral sentiment broke down completely, and the animal impulses took uncontrolled possession.

New cookery-books are appearing, highly praised and much advertised. On examining them we find the same old story, pepper, salt, mustard, curry, onion, spice, lard, excessive sugar, etc., etc. There are ladies who find it profitable to lecture and give lessons on buying and cooking beef, mutton, pork, etc.; why will not some who are versed in the simple ways of hygiene, go before the public and teach them the principles of physiology and how to meet the wants of nature. It is a work which ought to be done. There are many mothers and housekeepers who would be glad to have such instruction. I know from my own experience that many a woman has tried to make gems, biscuit, cake, and pie according to hygienic formulas, and failing repeatedly, has given up the attempt. More than one has told me plumply to my face, that it was *impossible* to make such things as are daily on my table without using yeast or shortening, because she had tried it. The very simplicity of the procedures in hygienic cooking is the reason in most cases of failure. But if some women well versed in this "art preservative" of the virtues of food were to open schools in our larger cities, and show how to make,

boil, stew, and bake, the number of hygienic advocates would be greatly enlarged, and there would be fewer cases of madness and crime for the newspapers to comment upon.

BREAKFAST.

Gluten Porridge. Stewed Potatoes.
Oatmeal Puffs. Fricasseed Eggs.
Dried Apple and Raisin Sauce. Bread. Broma.

DINNER.

Baked Fish and Egg Sauce. Snow Potatoes.
Asparagus. Lettuce. Graham Bread.
Strawberry-Cake and Cream.

SUPPER.

Graham Biscuit. Crackers.
Lemon Jelly. Cambric Tea.

GLUTEN PORRIDGE.

Put three pints of water, slightly salted, on the stove, in a double boiler, to boil. Take two-thirds of a pint of gluten flour, mix it to an even consistency with warm water, and then stir it into the boiling water. Stir for a few minutes, until thoroughly mixed with the water, and place the boiler where it will cook slowly and steadily for about three hours. If the porridge is too thick, add a little more water. If the flour is not mixed with water before putting it into the boiling water, it is likely to be lumpy.

FRICASSEED EGGS.

Boil eggs long enough to have the yolks stiff; divide them lengthwise and place them on a hot dish with the yolks uppermost; pour over them a simple sauce, or milk gravy. Ornament the dish with parsley, or any green salad you may happen to have.

OATMEAL PUFFS.

½ pint of fine oatmeal.
½ pint of Graham flour.
1 teaspoonful of sugar.
¼ " " salt.
1 pint of sweet milk.
2 eggs, (beaten).

Mix the oatmeal, flour, sugar, and salt together; add the beaten eggs and milk. Bake in hot gem pans, in a quick oven about twenty minutes. This recipe is sufficient for eighteen or twenty.

DRIED-APPLE-AND-RAISIN SAUCE.

Look over carefully, and wash the amount of dried or evaporated apples needed and put them on to cook, with one-third their quantity of raisins, or more if liked; add cold water enough to cover. When nearly done, add sugar to suit the taste. If the apples are put to soak overnight, as I prefer, they must be cooked in the water they are soaked in; if not, some of the flavor will be lost. All dried fruit should be cooked slowly.

BAKED FISH.

Select one weighing not less than three pounds; clean, wash, and wipe dry. Make a stuffing with bread-crumbs soaked out with a little milk, and mixed with a small piece of butter, a pinch of salt, and a beaten egg. Stuff the fish, not too full, and sew up the opening, which should be only large enough to permit thorough cleaning. When the fish is in the baking-pan, pour a cupful of hot water over it. Bake in a quick oven about one hour, basting frequently. When done, remove the thread, place on a dish and cover to keep hot until served. An egg-sauce is proper for dressing.

EGG-SAUCE.

1 tablespoonful of flour.
1 " " butter.
½ teaspoonful of salt.
1 beaten egg.
1 boiled "
1 pint of boiling water.

Beat the flour and butter to a cream, add the boiling water and mix well until smooth; now boil until it thickens, then remove to one side of the stove, and stir in the salt and beaten egg. Cut the *boiled* egg into small pieces and just before serving the sauce, stir them in.

STRAWBERRY-CAKE AND CREAM.

Make a sponge-cake, and bake it in two thin layers, in a long biscuit-pan. Select ripe berries, and place a thick layer, with sugar sifted over them, between the layers of the sponge-cake, while it is yet warm. Place a thick layer of the berries also over the top. Put a pint of sweet cream on the ice to cool; and when cold beat it to a froth and pour over the berries and cake when they are cold. Cream can not be beaten to a froth unless it is very cold.

GRAHAM BISCUIT.

Take very thick warm Graham porridge, cover the kneading-board with Graham flour, and knead the porridge into it until the dough is stiff enough to roll out nicely. Roll about an inch thick, cut in any shape preferred, and bake about half an hour in a quick oven. Look at them when they have been in twenty minutes.

LEMON JELLY.

2 ounces of Cooper's Gelatine.
1½ pounds of sugar.

2 quarts of water.
½ teaspoonful of salt.
The juice of four *large* or five *small* lemons.

Put the gelatine in a dish large enough to hold about three quarts of water. Pour one pint of cold water over it, then let it stand about fifteen minutes. Squeeze the juice of a lemon in it, add the salt and sugar; stir all together, then add three pints of boiling water, and stir again until gelatine and sugar are dissolved; now strain through a jelly-strainer and set away to cool. If made the day before it is wanted the jelly will be better. In summer use a half pint less of water. If poured into moulds, they should first be washed interiorly with the white of an egg and water, to prevent the jelly from adhering.

REMARKS.

See JOURNAL of Jan., 1883, for Stewed Potatoes.
" " " " " White Bread.
" " Feb., " " Broma.
" " May, 1882, " Graham Bread.
" " June, " " Asparagus.

If you wish to preserve the green color of peas, asparagus, beans, etc., boil them uncovered. Butter should never be allowed to *cook* into vegetables; if used it should be added after they are done, otherwise its flavor and quality are impaired greatly. Fresh ripe strawberries, crushed and sweetened, make a good sauce for boiled or baked puddings.

The art of cutting bread evenly and smoothly is an accomplishment. Bread which is roughly cut of varied thickness is uninviting to the eye. Our simplest food should be attractively served.

MIRA EATON.

THE DECAY OF TEETH.—A German observer concludes that the tooth most often affected by decay is the third molar, such cases forming one-half of the total number. The teeth begin to decay in a certain successive order, the lower third molar being first attacked, then the upper, then the lower fourth molar, and so on, the incisors and the canine teeth of the lower jaw being the last reached. The upper teeth are more durable than the lower in the proportion of three to two. The right teeth show a greater vitality than the left. The durability of teeth is less in light persons than in dark, and less in tall than in short persons. These results were obtained by an examination of 650 Russian soldiers, of whom 258 had unsound teeth.

NOTES IN SCIENCE AND AGRICULTURE.

Dangers of Antiseptic Surgery.—Prof. J. W. Wright is thus candid in speaking of the use of carbolic acid in surgical operations:

"The dangers of poisoning by carbolic acid in the treatment of open wounds, especially where considerable quantities are used, as in the syringing out of the cavity of a large abscess, are not so trifling, nor are cases of this kind so rare, as many of its warmer advocates would have us believe. Like other novelties in medicine and surgery, carbolic acid has been the popular craze for the last fifteen years. It has been used externally or internally, in some form or other, for almost every ill that flesh is heir to. That it has been the means of saving many lives, no one who has been at all observant can deny; that it has killed a considerable number of people is equally certain; that it will not cure everything, or always prevent blood poisoning where the constitution of the patient is depraved and the blood vitiated, is a proposition too self-evident to require argument.

"That the majority of simple wounds, occurring in a healthy subject, and treated under local sanitary conditions, will heal equally well without it, is generally acknowledged by a large number of careful, conscientious surgeons. In a word, carbolic acid, considered as a panacea, has had its day: like bromide of potassium, like chloral hydrate, and many other new drugs, after having turned the heads of more than half the medical world for a few brief years, it has, like them, come to occupy a definite place in the minds of the majority of physicians, and is valued by them for what it is worth, neither more nor less."

Animals as Weather Prophets.—Carefully recorded observations extending over a period of twenty years have shown Dr. C. C. Abbott that the autumnal storage of nuts by squirrels, the building of winter houses by muskrats, and other habits of these and other animals, or the absence of such habits, have no relation to the mildness or severity of the winter which follows. It thus appears that such creatures are no more reliable as weather prophets than the human charlatans who claim to foresee storms months in advance, and another widespread and deep-rooted notion is proven to be groundless.

Weather Prediction Frauds.—The Chief Signal Officer of the United States, in view of the wide publicity given to the wild Wiggins letter, has written to the *N. Y. Tribune* exposing the absurdity of the preten-

sions of the "weather prophets" in general, and of Wiggins in particular. He shows that no storm-track has ever been observed which moved in the path indicated in the Wiggins letter, and that such a path would be impossible for a storm to follow; while the threatened submersion of low lands by "planetary force," and the terrible destruction by the air currents east of the Rocky Mountains, are shown to be equally preposterous. He says:

"It is absolutely impossible to predict a storm for more than a few days in advance. The information can not be too widely distributed, that no one can foretell even the general character of a coming season, much less the occurrence of a particular storm in that season. It is possible that the advance of our knowledge may at some time enable us to predict the weather for many days in advance, but this is not possible at the present time. Meteorology is yet in its infancy, and no one is yet able to anticipate the occurrence of a meteorological phenomenon for more than a few days—a week at the most. If any one will take the trouble to verify the weather predictions which in these days are so frequently made by the actual weather experienced, he will find that about half of them are fulfilled and half fail. When a given prediction is fulfilled it is often made a matter of marked comment, while the unfulfillment of a similar prediction at another time is passed over in silence. The impression, therefore, prevails that reliance can be placed upon the forecastings of weather prophets, but this impression will be removed by any one who will give attention to the subject. A series of simple guesses, based upon no reasoning whatever, will come true in the long run as many times as they will fail. Until, then, weather predictions are fulfilled more times than they fail, they must be regarded as equivalent to guesses and as having no value whatever. All predictions of the weather to be expected a month or more in advance, whether based upon the position of the planets, or of the moon, or upon the number of sun-spots, or upon any supposed law of periodicity of natural phenomena, or upon any hypothesis whatever which to-day has its advocates, are as unreliable as predictions of the time when the end of the world will come."

Do You Give Your Hens Water?—"Duz your hen lay any egg dis cold wedder?" said a respected neighbor to me. They do; and our spring pullets commenced laying the middle of September, and they have laid eggs every day through November and December. He replied: "I vish you tell me how I make my hen lay in de cold wedder. I haf got sixty hen, and dey don't got a one egg a day all vinter." Do you give your hens water this cold weather? "*Vauter*, you say, is it, for hen?" Yes; do you let them have all the water they want to drink? "To trink, is it? Hen trink vauter? Ha, ha, ha! I tought you so much *sanctumonious* man you never choke enny." I'm not joking, my good neighbor. I was simply inquiring after the management of your hens, that I might tell you how to make 'em lay. "To you gif your poolet vauter to make egg?" I do, every morning; and during freezing weather I see that they have all the water they will drink, whenever they want water. "Ha, ha, ha!" shouted my friend, and said, "I know dey put vauter in de milk; but I neffer before heard dey put vater in de egg." I replied: Can a brewer make lager without water? "Oh, no; but lager is not egg." Can your wife make good bread, cake, or coffee without water? Can you make corn, potatoes, or anything else grow without water? "My cracious, I never thot pefore vauter vas goot to make hen lay egg. I vill gif my hen two parl [barrels] of vauter to-morrow, and see ef dey got vone egg for sixty hen." You will probably find that two barrels of water placed where sixty hens can have access to it for only one day, will not make even half an egg, I remarked. "My hen eat snow ven dey vants vauter." When there is no snow, what do they drink? Every morning, I said, as soon as my hens can see to leave the perches, they want to drink; and, with more regularity than I take my own breakfast, a dish of clean water is placed where they can drink. If the weather is freezing cold, I take a tea-kettle full of hot water to the hennery, and fill their dish with water, always exercising care to temper it with ice or snow, so that the water will not scald their mouths. Warm water, during a cold day, will not freeze in several hours. Every morning our hens drink and drink, and go and take drink after drink; and just before they go to roost (even in freezing weather) they will all drink several times before they are satisfied. If water was not really needed to promote digestion, they would not drink. Fowls will become exceedingly thirsty, when they do not have access to water, before they will eat snow. Then, when they have no water, nor even snow, laying hens suffer with slow digestion, or with indigestion, simply for want of water. A laying hen is simply a miniature and living laboratory for making eggs. A large proportion of every egg consists of water. Now, then, when a hen receives dry corn and other dry feed, how can she be expected to make eggs without water, any more than a cow can yield a full pail of rich milk when she is fed on nothing but dry meal, hay, and cornstalks? Yet, after all this twaddle about water, and the important part it plays in numerous instances, water alone will not make eggs, nor beer, nor bread. Respected reader, if you are not accustomed to lead or "ride your rooster to water," place a dishful of the luscious beverage where they can have free access to it in the morning, and then notice how many will drink as if they were thirsty. Fowls will live and thrive without water. So will sheep and neat cattle. Yet, domestic animals of all sorts will thrive far more satisfactorily when they have free access to water.

Orange, N. J. SERENO EDWARDS TODD.

Tracing Contagion.—A number of cases in the same herd, owned by a farmer at Salem, N. J., having died very suddenly, the veterinary surgeon submitted a specimen of the blood from the last victim to Professor Leidy for microscopical examination. The animal was apparently well on one evening, and was milked as usual; it died the next morning. The cause was not clear, but was suspected to be the result of anthrax, or splenic fever. A post-mortem examination was made the following day, and the abdominal viscera were found much congested, especially the spleen, which was gorged with blood. The specimen of blood from the spleen was examined and found to be teeming with bacteria of the form known as *Bacillus anthrax*, which is now viewed by most competent authorities as the cause of anthrax. The bacilli were actually more numerous than the blood corpuscles, which appeared unchanged.

This case shows that milk is forwarded to market drawn from cows which are within a few hours of their death from splenic fever. Such milk can hardly be wholesome, and doubtless contains the bacilli capable of giving contagion.

Let us hope that the fat from the carcasses of such animals is not sent to the nearest oleomargarine manufactory, as this substance is rendered only at a temperature under 120°, by the patent which is now supreme. We need not state that the thermal death-point of bacilli is far above such a temperature, and we leave our readers to draw their own conclusions respecting the results when such uncooked animal produce is used as an article of diet.—*Medical Record.*

Experiments with Fertilizers.—According to a correspondent of the *New England Farmer*, Mr. Alden Jameson gave quite a detailed account of the Gilbert and Lawes Experiment Station at Rothamsted, England, and the result of its operations. He thinks that every farmer is or should become the head of an experiment station located on his own farm. He gave as the result of his experiment in chemical fertilizers some very useful hints, but previously he had said a good word for the Connecticut State Experiment Station under the charge of Prof. Samuel W. Johnson, of Yale College, which seems to be doing something in the interest of practical farmers. Mr. Jameson, on his private Experiment Station, had already arrived at much the same conclusion that Professor Johnson has since, in relation to chemical fertilizers, and that is that the manufacture of specific fertilizers for each crop is somewhat doubtful in practice. Of the value of chemical or commercial fertilizers there is no doubt, but Mr. Jameson has come to the conclusion that but two varieties really avail with him—one that is applicable wholly to root crops, as potatoes, beets, etc., and the other to all crops except roots. For root crops he gave the following formula for one acre:

Sulphate of potash, 35 per cent	350 lbs.
Dissolved bone	150 "
Sulphate ammonia, 25 per cent	250 "
Sulphate of soda	50 "
Gypsum (land plaster)	200 "
In all	1,000 lbs.

And for all other crops the following:

Muriate of potash, 60 per cent	100 lbs.
Dissolved bone	150 "
Sulphate ammonia, 25 per cent	150 "
Sulphate of soda	50 "
Gypsum (land plaster)	150 "
In all for an acre	600 lbs.

As a cheap and effective top-dressing to grass land he gave the following, though the last formula is adapted to that, but more expensive than this:

Nitrate of soda	150 lbs.
Gypsum	200 "
Dissolved bone	150 "
In all for an acre	500 lbs

B.

Fence Posts that will Last.—A writer in an exchange says: "I discovered many years ago that wood could be made to last longer than iron in the ground, but thought the process so simple that it was not well to make a stir about it. I would as soon have poplar, basswood, or ash as any other kind of timber for fence posts. I have taken out basswood posts after having been set seven years that were as sound when taken out as when first put in the ground. Time and weather seemed to have no effect on them. The posts can be prepared for less than two cents apiece. This is the recipe: Take boiled linseed oil and stir in pulverized coal to the consistency of paint. Put a coat of this over the timber, and there is not a man that will live to see it rot."

"Doctoring" Farm Animals.—It is a poor practice to be continually dosing animals. When we see a farmer frequently visiting the drug-store for medicine for his stock, the impression is that there is something radically wrong in his management. He is the "sick one," and needs the aid of a good physician—some one to show him that sickness rarely happens on a well-ordered farm; that clean, warm stables and plenty of good feed, pure water in abundance, etc., are far better than their opposites, with all the physic that the largest drug-store can supply. Nothing is more clearly proved than the importance of care and keeping of the right sort for the health of the farm animals, and their profitable growth and increase. Sickness will sometimes come with the very best management; and when it does, it is better to employ skilled hands to cure than to "doctor" and "physic" and perhaps kill the valuable animal yourself, that under proper treatment might have been saved at a trifling expense. —*Agriculturist.*

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MODERN ÆSTHETICS.

THERE are many people among us who claim to belong to a select class or stratum of society by reason of a certain peculiarity of mind. This peculiarity exhibits itself in several ways, but all are allied to what is termed "art." Some of these people, for instance, devote much of their time to the study of painting, and are given to what is called "decorating" clay, glass, silk, cotton, etc.; others spend much time and a large proportion of their money in gathering collections of curious articles in glass, china, bronze, pottery, tapestry, etc.; others indicate a devout admiration for music and poetry of the dramatic order, and are eager to hear every new opera of foreign birth and to read every new composition of the Rossetti school. These people claim a higher grade of intellection than the average of the fairly educated, on the score of being more sensitive to the expression of beauty in nature and art. They are "æsthetic." What does the term itself mean? As a Greek derivative simply this: capable of perception, or apprehensive through the senses. But the scholar has applied it to a technical use, and made it to signify that philosophy or science which treats of the beautiful, or the principles of *belles-lettres;* and the child of fashion, borrowing from the scholar, has found it a convenient term for a capricious and vacillating humor.

We will not say that this application of the term is altogether improper, for such is not the case. The fashion for painting, decoration, *bric-à-brac*, music, poetry, is an outgrowth or manifestation of the faculties of Ideality and Sublimity which are inherent in the human mind; but it is not a regular or symmetrical manifestation because of the imperfect, uncultured state of the faculties. Certainly no argument is required to show that one's discernment of the beautiful is a matter of culture, for every faculty of the mind must be trained ere its judgment can be regarded as comprehensive and equitable. A man may be well educated intellectually, and have fairly developed Ideality and Sublimity, yet, when brought face to face with a fine picture, exhibit much crudity of judgment because of his lack of experience in art. He will show much natural fondness for beautiful things, and perhaps discourse well about the features of nature with which he has been familiar from childhood; but, lacking in experience and knowledge about works of art, he is an untrustworthy critic. So, also, is it with regard to music; it matters not how bright a man is as a lawyer or physician, how quick his organs of hearing are, his opinion of a musical performance will be narrow and juvenile to the experienced musician.

To be "fond" of anything—as people generally express their sense of pleasure when a faculty is gratified—does not imply capability of discriminating quality and value in the object of the "fondness."

Such capability is the result of observation, study, and training, and is acquired in most cases by slow degrees. We are too much inclined to mistake our likings or quickness of æsthetic sensibility for this capability; but when we test ourselves in comparison with a cultivated mind, we are awakened to a disconcerting consciousness of our ignorance, and discover that while nature has endowed us with a delicate susceptibility to what is beautiful and elevating, there remains for us the practical work of developing and instructing the faculty so that its delicate apprehensions shall give us solid, because intelligent, pleasure.

True æsthetic culture has a mellowing, harmonizing effect upon the character. It refines and sweetens the expression of the intellect, the moral and religious sentiments, and the social affections. They who affect æstheticism, and are, nevertheless, rude in manner, coarse in speech, or empty and superficial in thought, are manifestly ignorant of its meaning. They who adore the "ideal" and sneer at the every-day affairs of life, or complain that their aspiring souls are robbed of their birthright by being forced to take part in the service and care of home, to associate with the commonplace and "vulgar," are greatly lacking in knowledge of the first principles of æsthetics. Society is overweighted with the light and flimsy things, who, to change somewhat a humorous fling, would pursue

> Pastimes merely ornamental,
> And with a princely retinue
> Bask in savors sentimental,
> For idle change turn in the dance,
> Or paint on china, read romance,
> And when sensation's lost its power,
> In listless state lament the hour.

Verily, his mind is in a state of unbalance when one can not take any interest in common things — when his mind can not respond to the impulse of duty, and find welcome food for reflection in the routine which fortune has imposed. The sense of the beautiful has been given us for the very purpose that its influence shall refine and sweeten common things, and render our daily tasks, duties, and even struggles with adversity, instrumentalities of real soul growth. We have met in the walks of poverty and sorrow more than one who exemplified our idea of æsthetic culture, and whose beautiful resignation, coupled with patient labor, filled us with more delight than even the contemplation of a glorious sunset. Such a one could receive a dainty flower, and eloquently speak of the light and beauty it brought into his poor room, yet mix with his admiration no sigh of regret because there was no beautiful vase at hand in which he might fittingly set the flower. His frank admiration honored the flower, and it was fittingly enshrined when under the care of one who appreciated it.

NOT ALTOGETHER THE DIME NOVEL.

NO one doubts the harmful influence of that class of cheap literature which goes by the name of "dime novels"; but is attention enough given by the moral guardians of our girls and boys to the kind of reading furnished by the tens of thousands of weeklies and monthlies which are scattered broadcast over the land, and are found on the tables of homes deemed among the highest in culture and refinement? Stories, stories, stories, light, aimless, sensational, occupy their pages; stories of wonderful juvenile exploits and adventure, on land and sea, among Indians and wild animals, are

found between the covers of monthlies and weeklies issued by reputable publishers. Writers of some note are employed to supply tales for these, and their fascinating productions turn the heads of hundreds, perhaps thousands, of the boys and girls who read them. We know a boy whose reading has been confined to what are deemed the best juvenile weekly and monthly published, and who often sighs to be out upon the prairie or in the trackless forest, like Dick, or Will, or Joe, with fishing-rod, and gun and dog—and complains with much bitterness of the necessity of staying home—a home half rural in its character—and studying "all the time." We know girls whose little heads are full of unrest and dissatisfaction because they can not be dressed like Sallie, Margie, and Lita, in the "lovely stories," and go to parties, and travel in Europe, and have "such good times."

There are thousands of books in private and public libraries, which exert a harmful influence upon our young people; they present false views of life, or impart an unhealthful coloring to realities, and so imbue the immature intellects and weak sentiments of youth with extravagant notions. Many of the volumes in our Sunday-school libraries should be thrown into the fire. Not a great while ago we noticed a child of eleven reading "Peg Woffington," on the cover of which was pasted the library card of a certain Sunday-school. We had supposed that the books of that Sunday-school were under a strict censorship, but an evident laxity had crept into its methods, and suffered a book which should not be in such a library at all, to come into the hands of a mere child.

We do not ask for severity of phrase and Puritanic morality as cardinal elements in our juvenile literature—although we think that a little of Puritan strictness would be helpful in suppressing the prevalent tendency to reckless freedom in all branches of literature, in the illustration of moral subjects—but we do ask for an appreciation of the absolute needs of the young mind; that it may be trained symmetrically, nourished with good food, made broad and strong through a perception of the true and earnest in human life, and thus fitted for a useful, active future.

A WOMAN DOCTOR.

WE were told one day that Miss B. was ill, and unable to leave her room, and desired to see us. Miss B. is a lady on the border of middle life, with very few if any family relations in our city, and quite dependent upon her own exertions for maintenance. She was then living alone in a building not far from our office, where the apartment she occupied served for office, parlor, and dormitory. We knew that she was engaged in a rather hard struggle for existence, and feared that worry and work had at length broken her down. We called at her room and found that she was ill, indeed, with rheumatic fever, and so weak that she could scarcely sit up. She was alone, and upon our saying that she needed attendance, especially a nurse, she replied in a cheerful tone that the janitress of the building looked in occasionally, and was very kind.

"But you need more than the occasional looking in of a janitress," we urged. "At night, especially, you should have care, and some one should be here

to prepare such food as your case demands."

While we were talking a light step was heard in the hall, and soon the door opened, and Dr. S., a lady also of our acquaintance, entered. After an exchange of greeting we remarked: "I am glad to know that Miss B. receives your attention, doctor. She certainly needs it, and may for several days to come; but I am concerned about the way she lies here in solitude, and what she has to eat; for while she may not require much in quantity, she needs that which will nourish." Dr. S. smiled, and returned: "We'll take care of her." At the same time she threw aside the folds of her carriage-circular, and produced a large dish or bowl of something steaming hot, covered with a cloth. Setting the dish upon a table, she removed the cloth, and disclosed to view a custard, delicately browned and tempting. "I had this made while taking dinner, and think a little of it now and then will do you good, Miss B." We glanced from the doctor to the patient, whose face beamed with pleasure. "Ah, my comments were unnecessary," we broke out, "and I have now little apprehension that the patient will be neglected; I most heartily approve the plan of treatment of which this is a specimen prescription."

A week or so ago we attended the graduating exercises of the Women's Medical College of New York, and were deeply interested by the essays and remarks made by several of the lady professors, and by the class valedictorian; they expressed the sentiment of practical utility which every physician should illustrate in his or her calling, not only to prescribe what should be done, but to minister according to their ability to the wants of the sick and suffering. Welcome every woman physician who comes from her three years' course of medical study, deeply intent upon doing a good work! Thrice welcome every woman who, like Dr. S., unites the medical adviser and nurse in her code of professional duty.

CHARACTER-READING A GIFT AND AN ART.

HUNDREDS desire to learn to read human character at sight. The most successful men in business or in public life, and the most influential women who shine in and mould society, are those who have natural ability to read the dispositions and comprehend the talents of strangers. They know people at once, and can influence them as the skillful musician can read his musical score and make the instrument eloquent in rendering its magic strains.

But all are not endowed with this gift of character-reading, and therefore need to study character as a science through phrenology and physiology. In fact the phrenologist learns to read the bare skull which, like "Poor Yorick's," has finished its work; or, on the other hand, the traits in the child which in years to come are to bless or to blight the world.

Phrenology will double the power of the observer of mankind, although he may be regarded already as a genius in the knowledge of men; while all others who do not claim or possess special gifts in this direction, will find human nature revealed to them with wonderful distinctness, and will seem to be in a new world.

THE LAWYER, who has to deal with men when their selfish elements are stimulated by litigation, or with witnesses whose judgments and morals are warped by friendship and prejudice; or with jurymen who are unwisely biased, needs all that phrenology would teach him to measure and manage those with whom his profession brings him in contact.

THE MINISTER will find indispensable the aid which the doctrine of temperament and mental development will afford him in calling into action the better sentiments, and allaying the base monitions of depravity and passion; and he will seem to know how each person can best be approached with the truth, in order to obtain the best results.

THE TEACHER will find himself the master of a new revelation in reference to the talents and traits of his pupils, and how to awaken the best impulses, and modify and govern the worst traits, in those under his charge.

THE MERCHANT and business man desires to please and to influence successfully those with whom he must come into negotiation, and the difference between him who can read and understand customers, and him who lacks facility in knowing and managing men, is as wide as that between success and failure.

THE MOTHER in whose care the young life is placed, and which needs to be trained and moulded in spirit and disposition, as well as in mind and talent, needs quite as much as any the aid which phrenological instruction would impart to fill the most important if not the most conspicuous position in life.

For the aid of all such, quite as much as to train and instruct persons for professional practice in the field of Phrenology, the AMERICAN INSTITUTE OF PHRENOLOGY was established by legislative enactment in 1866, and in which every year, beginning the first Tuesday in October, classes of students are taught in everything that pertains to Mental Science as related to development of brain and body. No merchant, lawyer, minister, or teacher can afford to remain without the instruction which the Institute of Phrenology imparts. Circulars sent on application giving full information.

Our Mentorial Bureau.

To Our Correspondents.

QUESTIONS OF "GENERAL INTEREST" ONLY *will be answered in this department. But one question at a time, and that clearly stated, must be propounded, if a correspondent shall expect us to give him the benefit of an early consideration.*

IF AN INQUIRY FAIL TO RECEIVE ATTENTION *within two months, the correspondent should repeat it; if not then published, the inquirer may conclude that an answer is withheld, for good reasons, by the editor.*

TO OUR CONTRIBUTORS.—It will greatly *aid the editor, and facilitate the work of the printer, if our contributors generally should observe the following rules when writing articles or communications intended for publication:*

1. *Write on one side of the sheet only. It is often necessary to cut the page into "takes" for compositors, and this can not be done when both sides are written upon.*
2. *Write clearly and distinctly, being particularly careful in the matter of proper names and quotations.*
3. *Don't write in a small hand, or in pencil, as the compositor has to read it across his case, a distance of nearly two feet, and the editor often wants to make changes and additions.*
4. *Never roll your manuscript or paste the sheets together. Sheets about "Commercial note" size are the most satisfactory to editor and compositor.*
5. *Be brief. People don't like to read long stories. A two-column article is read by four times as many people as one of double that length.*
6. *Always write your full name and address plainly at the end of your letter. If you use a pseudonym or initials, write your full name and address below it.*

WE CAN NOT UNDERTAKE TO RETURN UN*available contributions unless the necessary postage is provided by the writers.* IN ALL CASES, *persons who communicate with us through the post-office should, if they expect a reply, inclose the return postage, or what is better, a prepaid envelope, with their full address. Personal matters will be considered by the editor if this is done. Anonymous letters will not be considered.*

BOOK AND INSURANCE AGENT.—*Question:* What would be the comparative success of a person as an agent who had Benevolence very large, Veneration and Conscientiousness very large, and Mirthfulness, Friendship, and Agreeableness only moderate? P. H. F.

Answer: If with this organization there be associated a strong perceptive intellect with a good degree of Combativeness and Destructiveness, also Firmness and the Motive temperament, the individual might become an admirable agent. It would need time for breaking in, and it would be better that the wares he dealt in were of a staple, necessary, definite character; articles which he could talk about earnestly; for which he would have some respect on the score of their high utility to society. One of the important elements to successful agentship is Agreeableness together with large Firmness and gen-

erally well-poised individuality. He ought also to have Human Nature well indicated, that he can judge quickly of character and adapt himself to the people he comes in contact with and to whom he would show his samples. A man with the combination specially defined ought to deal in books of a moral or religious sort. As an insurance agent, he should have to do chiefly with men in the ministry, we will say, or those connected with charitable and religious work. Secretiveness is an organ of no little value to the negotiator or solicitor, for the reason that it contributes tact and policy. Men are often required to deal with those who have this organ largely developed in their mentality, and to meet its shrewd influence the solicitor should possess it in a good degree also.

INTUITION AND SMALL SPIRITUALITY.—*Question:* How can a person having Spirituality moderate, therefore having little faith, and insisting on proof, yet have Intuition described as large?

Answer: The organs are distinct, and one may be large and the other small. Intuition has to do with one's impression of persons and things. A person may be very quick in discerning truth or reality, and so form impressions amounting to convictions, and yet have small Spirituality, and be therefore inclined to require a positive demonstration of things which strike him unfavorably, through intuition, before he will be won over. We often find people who have very strong convictions and yet possess very moderate faith; are exceeding cautious about taking matters on trust, especially those which may render them somewhat responsible by their acceptance.

LIME-KILN.—One of our correspondents wishes to know how to build a lime-kiln so that the draft shall be perfect; he wants especially to know how large the flue should be in relation to the size of the eyes. The correspondent is Mr. G. B. McCoy, of Girard, Crawford Co., Kansas.

POSE AND SELF-ESTEEM.—P. F. F.—A man having large Self-esteem walks uprightly, with his shoulders thrown well back, the head erect and the chin well forward, and is rather stiff in his gait. With Approbativeness large he walks with a somewhat oscillating motion of the head; may at times straighten up; throw his head and shoulders back for the sake of improving his appearance, and so winning the admiration of observers; but usually the chin and nose are elevated above the horizontal; while a man with Self-esteem walks with the head set squarely and with a firm tread. A man with strong Combativeness walks in a straightforward fashion, planting his feet with a sort of hammering motion; the head is drawn somewhat down, as it were into the neck, or at least that is the appearance, suggesting the idea of an assault. With Firmness Combativeness, and Self-esteem all large, the attitude is rigid, and the person walks stiffly upright; the muscles of the neck appear to have set in a state of contraction, and the whole air is one of confidence and positive self-reliance.

DOUBLE CHIN, CURLING LIPS, ETC.—A. U.—A double chin is more indicative of temperament than of special mental organism. One with a strong tendency to fatness will show the duplicature, while those with the Lymphatic temperament generally possess it. To be sure, where the feature is excessive, it is indicative of a slothful nature, with fondness for eating and drinking, ease, and comfort. Associated with curling lips and thick, puffy mouth, the character is strongly vain, passionate, and sensual.

THE MASTOID PROCESS.—*Question:* I should like to know if the mastoid process indicates character, especially when it is very large? H. O. R.

Answer: The mastoid process, as you probably know, serves the purpose of nature for the insertion of the sterno-cleido muscles which support the head laterally. Its large development indicates, or is associated with a strong osseous frame, which again is indicative of the Motive temperament. Taken in connection with the physical expression, the mastoid serves as a help to the phrenologist in estimating the temperament.

BONE-MATTER IN FOOD.—L. K.—The cereals, among which are wheat, oats, barley, and corn, are rich in bone-making substances; so also are beans and peas, the latter standing at the head, perhaps, of phosphatic and lime foods; next are wheat, oats, barley and so on. See late Numbers of the Phrenological department of SCIENCE OF HEALTH for analytical lists.

FOOD IN HYPERTROPHY OF THE HEART.—A. M. D.—In cases of enlargement of the heart, the food should be as free as possible from exciting substances; whatever conduces to heat the blood should be avoided. We do not object to the use of a little lean flesh food, but we advise mutton, poultry, and fish as preferable to beef. It is quite unnecessary, however, for one to eat flesh, but those who dispense with it should select farinaceous food containing a large proportion of nitrogenous matter.

What They Say.

Communications are invited on any topic of interest: the writer's personal views, and facts from his experience bearing on our subjects, being preferred.

'LEARNING CHINESE AT EIGHTY.—One of our old friends, faithful and true, Mr. J. S. F.

G. Mittag, of Lancasterville, S. C., has recently given some attention to the study of the Chinese language. He says, "I am trying to learn if a man in his eightieth year can attain to a respectable knowledge of it." He sends us a card on which is written a sentiment in Chinese characters handsomely executed. Some day when we have an abundance of leisure, we shall endeavor to decipher it, provided we have, like Mr. Mittag, made some progress in Chinese. We believe that Cato when well advanced in life took to studying Greek; so we don't see why Mr. Mittag can not indulge his fancy for Chinese; who knows but in the other life he may have occasion to talk it among genuine "Celestials."

WHY SO BLIND?—Editor PHRENOLOGICAL JOURNAL: Mr. B. F. Underwood, one of the editors of the *Index*, has just been West on a lecture tour. One thought stated by him at a public meeting in Chicago was, that "Morality is the result of experience; that there is no innate conscience in man only as created by his environments."

If there is any truth in Phrenology, and I hold that it is all truth, then this statement from a thinker such as Mr. U. is a very serious error, and it seems passing strange to me that despite all the teachings of Gall, Spurzheim, George Combe, and others, there are men of mind who will still continue to lead the masses astray. If they would but open their eyes to the world around them, it is so full of facts contradicting their statements, they certainly would be admonished of their error. I am put in mind of a thought sent to the writer in a letter from Geo. Combe in 1856, in which he said: "The world is dreaming over the truths of Phrenology as they did over the rotation of the globe and the circulation of the blood, *and some generations must die ere* one arises which shall not only talk and study about it, but which shall practice it in thought, word, and action."

I am forced to ask, What, in some men's opinion, constitutes Mind? Is it made up of environments, or is it an entity in and of itself?

If man has no innate sense of justice, as Mr. Underwood contends, then we ask, What is it that constitutes an action right or wrong? The answer probably would be that a savage who stole a horse belonging to another brave and had his skull split open for so doing by the wronged one, had a sense of right taught him and his fellow Indians, so that they let horses belonging to others alone in the future.

The question arises: What put the idea in the wronged brave's mind that the thief of his horse deserved to be punished? You may run the thought away back for thousands of years to the first man who had any article belonging to him stolen, and that first man did not require to be taught by his environments that an act of injustice had been done him by the theft.

If man has not got a conscience, then he has no moral faculties, and is only an intellectual brute. The eye is not sight—it is only the organ of sight, and as no man can see without an eye, so no man can see an action to be right or wrong unless he has organs in the brain by which the moral quality of an act can be perceived.

Environments surround animals as well as men; why, then, don't they become moral beings like men? Phrenology says, because the proper brain cells have not been given to them.

Phrenology! how plain, how simple, and how true! We are truly sorry that powerful intellectual men do not hail it as a great beacon-light, to light them on a road which without it they must continue to wander in darkness and, in our humble opinion, act the part of the blind leading the blind. WM. B. FYFE.

Pontiac, Ill.

HOW HE LEARNED OF PHRENOLOGY.—Some time in 1877 I noticed in the *Primitive Christian*, of Huntingdon, Pa., a short notice of (your) Daniells' "How to Sing," and being interested in music, I concluded to procure a copy. I sent to you for a copy of the above, and you kindly sent me with it an Annual of Phrenology for 1876 and your catalogues. From them I received my first knowledge that there was such a science as Phrenology.

I remembered having seen in my father's secretary, an old paper containing the biographies and phrenological characteristics of the Presidents, also a phrenological map, which I soon hunted up and eagerly read, resolving to know more of the then, to me, new science. The next step was to send for a copy of Wells' "How to Read Character" and some odd Numbers of the PHRENOLOGICAL JOURNAL that you offered very cheap. After reading them carefully, I resolved to subscribe to the JOURNAL, which I did, and have been a subscriber ever since, and shall remain one so long as it remains as readable as it now is. I next purchased at one time, some $20 worth of your books, and have since sent you orders amounting with this one to considerably more than $100. Of course others have done far more perhaps than I, but you must know that I am a country boy and school teacher. It is hardly necessary for me to add, that I have been incalculably benefited by Phrenology. It naturally led me to the study of physiology, etc., which taught me how to live so as to be of the most use to myself and to my fellow-man. Your examiner gave me in 1871 a delineation of my character from photographs which has been of great benefit to me. He says therein that I would make a good phrenologist, and indeed I am greatly pleased with the idea. I have been studying and saving money with that end in view for some time. G. B. H.

Bridgewater, Va.

PERSONAL.

MR. J. OSGOOD, one of the later students of the Phrenological Institute, is perseveringly at work in Ohio, and has thus far met with encouragement.

KING HUMBERT, it is said, is falling into a confirmed melancholy, and speaks very little to anybody. What's the matter? Is it a broken-down constitution, so much the case with young gentlemen of royalty?

BRONSON ALCOTT is so far recovered that it is expected he will be able to discharge his duties as Dean of the Concord School of Philosophy at the approaching summer session, and also to deliver the course of lectures assigned to him in its programme.

CLARA FISHER (Mrs. Maeder) has been sixty-five years on the stage, and is seventy-two years old—a vigorous and spirited lady. The time was when the name of Clara Fisher was even more famous in America than that of Patti. This reputation she has outlived—it being evanescent like everything else—evanescence of that kind which depends upon the approbation of the multitude.

WISDOM.

"Think truly, and thy thought
Shall be a fruitful seed."

FALSE modesty is the last refinement of vanity. It is a lie.—*Bruyere.*

WHEN there is much pretension much has been borrowed; nature never pretends.—*Lavater.*

THE most beautiful ear-rings are those which can not be seen, not even with a microscope.

THE truly illustrious are they who do not court the praise of the world, but perform the actions which deserve it.

THERE iz a great deal ov poverty in the world, and we find it az often among those who hav too much welth as among those who hav too little.

POWER, in its quality and degree, is the measure of manhood; scholarship, save by accident, is never the measure of a man's power.

WHAT is a good life worth if it be not crowned by a good death? Yet a good life is the nearest approach in our power to a good death. There have been comparatively few good deaths which have not come at the end of good lives.—*Faber.*

THE earnest men are so few in the world that their very earnestness becomes at once the badge of their nobility; and as men in a crowd instinctively make room for one who seems eager to force himself through it, so the way is made open to one who rushes zealously toward some object lying beyond the crowd.

MIRTH.

"A little nonsense now and then
Is relished by the wisest men."

IF the doctor orders bark, has not the patient a right to growl?

SIDNEY SMITH said to his Vestry, in reference to a block pavement proposed to be built around St. Paul's: "All you have to do, gentlemen, is to put your heads together and the thing is done."

BOY: "Please can yer let mother 'ave a couple a' dips and a bundle of wood?" Shop-keeper: "I don't know. Is your father got anything to do?" Boy: "No; but mother's got plenty to do—to keep father sober."

"I DON'T ask for any man's advice!" said the man with big self-esteem. "I can do my own thinking." "Yes," returned his neighbor, "I think you might, and not be greatly overworked, either."

"I DO wish you would come home earlier," said a woman to her husband. "I am afraid to stay alone. I always imagine that there's somebody in the house, but when you come I know there ain't."

Two Irishmen were traveling when they stopped to examine a guide-post. "Twelve miles to Portsmouth," said one. "Just six miles apiece," said the other. They trudged on apparently satisfied at the distance.

THE addresses of a certain young man having been declined by a young lady, he paid court to her sister. "How much you resemble your sister," said he on the evening of the first call. "You have got the same hair, and the same forehead, and the same eyes—" "And the same noes," she added quickly.

THEY were at the theatre and he had been out between the acts. "John," said Mrs. Smith, "what smell is that?"

"Cloves."

"But what other smell?"

"Allspice."

"But isn't there another?"

"Yes—Apples."

"Just one more."

"Cider—my dear."

"Well, John," she said, "if you'd only go and drink a little brandy now, you would make a mince-pie." And this is what some people go to the theatre for!

Library.

In this department we give short reviews of such NEW BOOKS *as publishers see fit to send us. In these reviews we seek to treat author and publisher satisfactorily and justly, and also to furnish our readers with such information as shall enable them to form an opinion of the desirability of any particular volume for personal use. It is our wish to notice the better class of books issuing from the press, and we invite publishers to favor us with their recent publications, especially those related in any way to mental and physiological science. We can usually supply any of those noticed.*

CONGRESSMAN STANLEY'S FATE. By Harriet A. Harp. 16mo, cloth, pp. 403. Price, $1.25. New York: National Temperance Society, J. N. Stearns, Agent.

A new story, which illustrates a too common feature of American public life, and depicts in striking colors the fact that moderate drinking is but a stepping-stone to drunkenness. The subject of the story, Mr. Stanley, had inherited a liking for alcoholic drinks, and his only safety lay in his abstaining entirely from their use. When first overcome, being warned and ashamed, he decides to abstain. When elected to Congress, however, he finds the allurements and claims of society too strong for his weak nature, and, admired and flattered by all, he easily falls a victim to the pernicious, convivial wine-cup.

LOOKING DOWN THE AGES FROM A PROPHETIC STANDPOINT. By John T. Walsh. 12mo, pp. 260. St. Louis: John Burns.

The author has undertaken the difficult task of interpreting Bible prophecy in a spirit of earnestness and deep reverence. Believing it to be the duty of a Christian to study the Bible with a view to understanding its meaning, as well with respect to its predictions as with respect to its moral injunctions, he has striven to contribute something to the world's knowledge or intimations of future events. In some of his views there appears to be a vein of speculation and impracticability, yet we doubt not Mr. Walsh's sincerity, and his by no means inconsiderable capacity as a biblical scholar. The latter appears clearly enough to the reader. Some of the principal views which he deems warranted in holding by Bible authority are the final restoration of the Jews, the personal reign of Christ on earth, and the inauguration of a new and glorious era in which the saints will reign. He treats some declarations which are regarded by commentators as figurative or symbolical, as literal and positive in their bearing upon future history. He is a Literalist without being a sectary, and speaks from conviction, which, in itself, is a matter to his credit.

THE INTERNATIONAL REVISION COMMENTARY of the New Testament—Based upon the Revised Version of 1881. By English and American Scholars and Members of the Revision Committee. Edited by Philip Schaff, D.D., LL.D. Vol. V. The Acts of the Apostles. By J. S. Howson, D.D., and H. D. M. Spence, M.A. 16mo, pp. 420. New York: Charles Scribner's Sons.

To the Bible student the book of the Acts is one of the most interesting in the New Testament, on account of its matter-of-fact record of the work of St. Paul and his associates in disseminating Christianity among the nations of Europe. When read with suitable aids, it is found replete with information concerning the history and characteristics of the Mediterranean peoples. The present volume is an abridgment of the Illustrated Commentary of Dean Howson and Canon Spence to the Revised Version, valuable additions and notes being supplied by Dr. Schaff. It is of course altogether superfluous for us to say a word of commendation on the work, after mentioning the names of the gentlemen who have compiled it.

HOW TO BUILD A HOUSE—Co-operative Building Plans. Containing the most approved Designs for Villas, Cottages, Farm Houses, etc. New York: Published by the Co-operative Building Plan Association. Price, 50 cents.

What married man or woman does not wish to live in his or her own house, or to have one arranged and fitted up to their notion? Thousands of dollars are expended in vain directions by people who want such a house, but do not know anything about the details of building. This handsome publication comes in to offset or prevent such vain expense, and to instruct people with regard to the useful and beautiful in housemaking—how to attain their end without much trouble.

IN A NUTSHELL. Suggestions to American College Students. By Dio Lewis, author of "New Gymnastics for Men, Women, and Children," "Our Girls," etc. 12mo, pp. 178. Price $1. New York: Clarke Brothers. Supplied by Fowler & Wells.

In this volume the author has presented many of the principles of hygiene in the lively, humorous fashion which has made his books generally acceptable. He is emphatic and sincere, while funny and jolly, illustrating in his manner the importance of good nature to right living and good health. He tells in brief epigrammatic statements and by short stories what is right and what is wrong in our every-day habits; suggests improvements in our practices of breathing, eating, sleeping, dressing, etc., etc. The book is indeed a condensation of vital truths which society should know.

TOBACCO: Its Effects on the Human System. By Dr. Wm. A. Alcott. With Notes and Additions by Nelson Sizer. Illustrated. New York: Fowler & Wells. 151 pp. Price by mail, post-paid, 25 cts.

When one observes the prevailing use of tobacco on the streets, on the boats or trains, and especially at hotels, watering-places, and wherever men meet to recreate, the question is forced upon the thinker, what must be the effect on the present and coming generation of such a use of so powerful a poison? It is a costly indulgence, and if it be not a benefit, but an unquestionable damage, why should not sensible men and boys, ambitious to be great and good men, full of power to win success and renown, rise above the habit and become released at once from the expense, the inconvenience, and the damage to health and strength? The body of this work by Dr. Alcott has been previously published, and hundreds of thousands of copies have been circulated, and uncounted numbers of persons have been saved from contracting the habit or reformed from it. The new matter, embodied in the NOTES AND ADDITIONS by Mr. Sizer, who has made the subject a study, and has had a large experience in aiding people to throw off the habit, gives to the book a new and fresh interest. Perhaps the most practical and valuable feature of these additions is the presentation of a feasible way to overcome the habit. The greatest slave of tobacco may learn herein how to give it up without much difficulty or the feeling of nervous loss, and so become thoroughly restored to self-mastership and health.

PUBLICATIONS RECEIVED.

THE EARLY AMERICAN CHRONICLERS. By Hubert Howe Bancroft, of San Francisco, Cal. An essay by the historian of the Pacific Coast, in which he considers certain charges made against his works and his methods, and endeavors to establish his views with regard to Mayo and Aztec civilization. He gives some inside glimpses of the character of his investigations, which have been so fertile in their results, especially the extended series of volumes on the natives of the Pacific States.

THE POPULAR SCIENCE MONTHLY (D. Appleton & Co.) for May seems more voluminous than usual. The titles in its table of contents cover a pretty wide field of scientific thought. Among them are: Remedies of Nature for Consumption, Microscopic Life in the Air, How much Animals Know, How the Ancient Forests became Coal, Gymnastics, Why we are Right-handed—in which the author derives one reason, from the fact of the larger size of the left hemisphere of the brain, and therefore its more important influence in the physical movements of the right side of the body.

THE TEMPERANCE TELESCOPE, by S. Conant Foster; illustrated by C. J. Howard, is a very striking and practical presentation of temperance principles. There are fourteen different views of the effects of intemperance; with illustrations effective in enforcing the moral of the text. Published by the National Temperance Society, at 50 cents a copy.

SCIENCE; a weekly published by Mr. Moses King, of Cambridge, Mass., makes its weekly visits to our *sanctum*, and is found a useful paper. The current work of the world's scientists is succinctly reported, and we trust that the publisher is solidly sustained in his endeavor to disseminate useful information.

W. H. CARSON'S SEED CATALOGUE for 1883 comes to us from Tuttle, N. Y., and is a very satisfactory list; especially of the products of the kitchen garden. It contains a good many novelties and specialties which truck-men can appreciate. Flowering plants also form a considerable list, and are illustrated with more than usual fullness.

THE NEW YORK ASSOCIATION for the Protection of American Industry. Proceedings of a mass-meeting held at the Cooper Institute, Feb. 1, 1883. This association is an important one; among its members are some of the most prominent men in our community; and its meeting as shown by this report was an affair of moment. We are earnestly in favor of the development, protection, and advancement of the various industries in the United States, by means at once reasonable and altruistic; not selfish and exclusive. We believe in the restoration and development of ocean navigation in behalf of Americans, and through the use of ships built and owned by Americans. We are earnestly in favor of the workingman, and think there is too much said and done for the capitalists, or the mere money owner; while the workingman is neglected in some respects and even oppressed.

CORNELL UNIVERSITY REGISTER for 1832-83. A very full description of the departments of this progressive and highly useful foundation of the late Ezra Cornell, at Ithaca, N. Y.

THE AMERICAN ART JOURNAL is well sustained by Mr. W. M. Thoms, who succeeded the late Mr. H. C. Watson as proprietor and editor. We notice an appreciative sketch of the pianist, Mr. H. G. Hanchett, in the Number for April 21st.

F. R. PIERSON'S (Tarrytown, N. Y.) Catalogue of Vegetables and Flowers is well packed with standard and new varieties for home and farm use. Collections of seeds are offered in variety which will meet the need of many garden lovers for a good supply at a nominal cost.

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